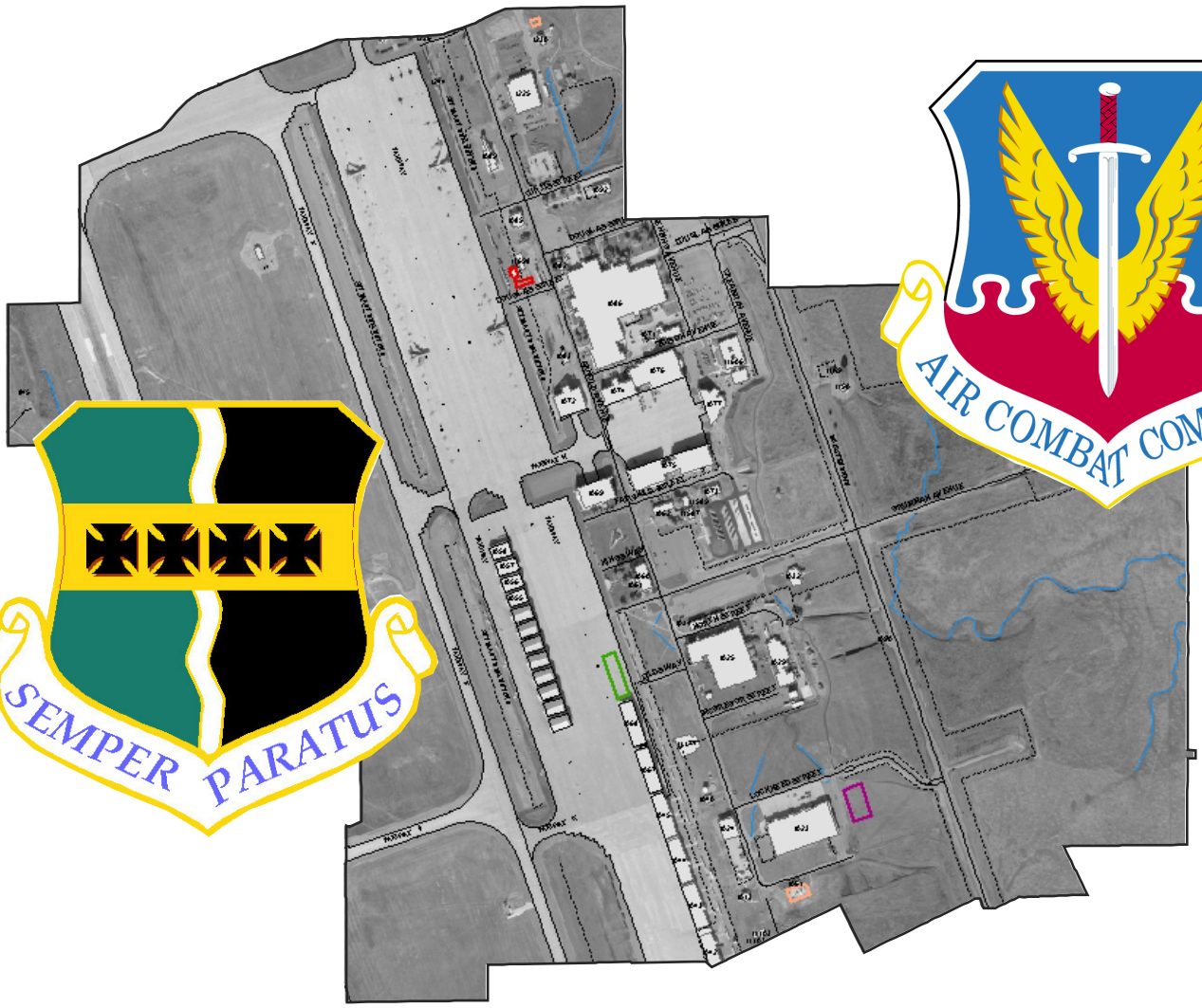


# Environmental Assessment

## Wing Infrastructure Development Outlook

## (WINDO) Implementation Plan (FY 04-06)

## Volume 1

**Beale Air Force Base, California**

**July 2005**

# Report Documentation Page

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# FINDING OF NO SIGNIFICANT IMPACT (FONSI)

## 1.0 NAME OF THE PROPOSED ACTION

Wing Infrastructure Development Outlook (WINDO) Implementation Plan at Beale Air Force Base (AFB), California: Volume 1.

***Background.*** The purpose of the WINDO Implementation Plan at Beale AFB is to improve the facility planning process, capture the Wing Commander's vision of what infrastructure improvements are necessary to support the base's on-going mission, and link the Base General Plan to individual funding programs such as Military Construction (MILCON); Operations and Maintenance (O&M), Sustainment, Restoration, and Modernization for Contract (SRMC); Environmental Restoration Account (ERA); Defense Energy Systems Command (DESC); Anti-Terrorism/Force Protection (AT/FP); Quality of Life (QOL), Army & Air Force Exchange Service (AAFES),and other programs to provide a solid plan that both the base and Air Combat Command (ACC) agree upon and understand.

The objective of this Environmental Assessment (EA) is to disclose and analyze potentially significant environmental impacts expected from implementation of Beale AFB's WINDO Implementation Plan and development projects and long-term mission-based actions which comprise the plan (the Proposed Action). A secondary objective of this EA is to determine the potential cumulative impacts from Beale AFB's mission base-wide.

Eighty-seven projects were evaluated under the WINDO Implementation Plan. All WINDO Implementation Plan projects were verified to determine if they qualified for a categorical exclusion (CATEX), were evaluated in an EA with a signed Finding of No Significant Impact (FONSI), or are currently being evaluated in a separate EA. All projects not determined to be in these categories were determined to be proposed projects. All proposed projects were further evaluated to determine if they qualified for a CATEX or if they required further analysis in an EA. In order to expedite the EA timeline, those WINDO projects requiring further analysis in an EA were divided into two categories:

- EA Volume 1 - those projects with no potential to impact to 100-year floodplain and/or wetlands and threatened and endangered species habitat; and
- EA Volume 2 - those projects potentially impacting 100-year floodplain and/or wetlands and threatened and endangered species habitat.

Below is a summary of these 88 WINDO Implementation projects.

- Approved as a CATEX: 17 projects
- Approved as an EA with a signed FONSI: 13 projects
- Proposed to qualify for an USAF CATEX: 37 projects
- Proposed, needing further analysis in an EA (Volume 1): 9 projects
- Proposed, needing further analysis in an EA (Volume 2): 11 projects

## 2.0 DESCRIPTION OF PROPOSED ACTION AND NO ACTION ALTERNATIVES

***Proposed Action.*** The Proposed Action consists of nine projects. These nine projects (construction, demolition, and renovation) are listed below. No changes in personnel requirements or aircraft operations would occur.

- Demolition of motor gasoline (MOGAS) Storage Tanks 491 to 499;
- Construction of a running path at O'Malley Field;
- Construction of a liquid oxygen (LOX) storage facility;
- Construction of a maintenance/administration facility;
- Construction of a mobility equipment storage facility;
- Construction of a shopette gas service station and car wash;
- Demolition of Building 5800;
- Construction of a 2-Bay Pre-Flight Hangar; and
- Construction of a consolidated storage facility.

***No Action Alternative.*** Under the No Action Alternative, Beale AFB would continue to use its facilities and infrastructure in its current condition and configuration. This alternative would not address the mission, security, and safety requirements of the ACC and Beale AFB, or meet the standards specified in Unified Facilities Criteria 4-010-01.

## 3.0 SUMMARY OF ENVIRONMENTAL EFFECTS

***Air Quality.*** There would be no significant effects on regional or local air quality from the Proposed Action. There would be a temporary increase in construction-related emissions during project construction. The Proposed Action would generate emissions well below conformity *de minimis* limits as specified in 40 Code of Federal Regulations (CFR) Part 93.153. Because the emissions generated would be below *de minimis* levels, it is reasonable to assume that the temporary construction emissions caused by the Proposed Action would not cause a violation of the National Ambient Air Quality Standards (NAAQS), and a full Conformity Determination would not be required.

***Biological Resources.*** Implementation of the Proposed Action would result in a small loss of nonnative grassland habitat during construction. Due to the abundance of comparable grassland habitat in the surrounding area, the low loss of grassland habitat would not have an adverse impact on grasslands on Beale AFB. Therefore, no adverse effects on annual grassland habitat would occur from implementation of the Proposed Action. No threatened or endangered species or wetlands are located within the project area.

***Geological Resources.*** There would be no significant effects on geological resources as a result of implementation of the Proposed Action. The effects on soil erosion and sedimentation from construction activities are considered minor because erosion and sediment controls would be in place during construction to reduce and control siltation or erosion impacts to areas outside of the construction site.

***Water Resources.*** There would be no significant effects on surface waters or groundwater as a result of the Proposed Action. The effects from minor increases in storm water runoff could lead to erosion, transfer of pollutants, or flooding; however, these effects would not be substantial.

*Hazardous Waste Management.* There would be no significant effects on hazardous materials and waste management due to implementation of the Proposed Action. Minor amounts of hazardous waste would be generated during project construction. In addition, the Proposed Action is within or in close proximity to four Environmental Restoration Program (ERP) sites: D-23, Ninth Transportation Refueling Vehicle Maintenance Shop; SD-32, Building 1086; ST-18, Bulk Fuel Storage Facility; and ST-22, Underground Storage Tanks (Basewide). Because of the potential threat of contamination from ERP sites during construction, it is recommended that a health and safety plan be prepared by the contractor in accordance with Occupational Safety and Health Administration (OSHA) requirements prior to commencement of construction activities. In addition, should contamination be encountered, handling, storage, transportation, and disposal activities would be conducted in accordance with applicable federal, state, and local regulations, Air Force Instructions, and Beale AFB programs and procedures. While working within ERP sites, workers should either be 40-hour Hazardous Waste Operations and Emergency Response (HAZWOPER) trained or should be overseen by a supervisor with OSHA Site Supervisor certification.

*Safety.* There would be no significant effects on structure or personnel safety due to implementation of the Proposed Action. Implementation of the Proposed Action would slightly increase the short-term risk associated with construction contractors performing work at Beale AFB during the normal workday because the level of such activity would increase. In addition, construction workers could be exposed to buried unexploded ordnance and hazardous wastes during project construction. An ERP waiver approved by HQ ACC is required prior to accomplishing any work on or near a range. 9 CES/CEV staff should be contacted prior to commencement of construction activities to determine if an ERP waiver is required for the Proposed Action for all proposed work on or near range sites and for safety requirements that would need to be followed during construction.

*Transportation.* There would be no significant effect on transportation due to implementation of the Proposed Action. All road and lane closures would be coordinated with the Security Forces and would be temporary in nature; therefore, no adverse direct or indirect effects on transportation systems would be expected.

## 4.0 CONCLUSION

Based on the provisions set forth in the Proposed Action, all activities were found to comply with the criteria or standards of environmental quality and coordinated with the appropriate federal, state, and local agencies. The attached EA and a draft of this FONSI were made available to the public on 23 February 2005 for a 15-day review period. All public and agency comments received were addressed in the EA.

## 5.0 FINDINGS

***FONSI.*** After review of the EA prepared in accordance with the requirements of the National Environmental Policy Act (NEPA), the Council on Environmental Quality (CEQ) regulations, and *Environmental Impact Analysis Process (EIAP)*, 32 CFR Part 989, as amended, I have determined that the Proposed Action would not have a significant impact on the quality of the human or natural environment. An Environmental Impact Statement (EIS) will not be prepared. This decision has been made after taking into account all submitted information, and considering a full range of practical alternatives that would meet project requirements and are within the legal authority of the USAF.

**DOMENICK EANNIELLO,, Colonel USAF**
Vice Commander

18 JUL 05
**Date**

## ABBREVIATIONS AND ACRONYMS

| | |
|---|---|
| 940 ARW | 940th Air Refueling Wing |
| 9 CES/CEV | 9th Civil Engineering Squadron/Environmental Flight |
| 940 CES/SVS | 940th Civil Engineering Squadron/Services |
| 9 RW | 9th Reconnaissance Wing |
| AAFES | Army & Air Force Exchange Service |
| ACC | Air Combat Command |
| ACM | Asbestos Containing Material |
| AFB | Air Force Base |
| AFI | Air Force Instruction |
| AFOSH | Air Force Occupational Safety and Health |
| AFPD | Air Force Policy Directive |
| AGS | Aircraft Generation Squadron |
| AOC | Area of Concern |
| AQCR | Air Quality Control Region |
| AT/FP | Anti-Terrorism/Force Protection |
| CAA | Clean Air Act |
| CAIS | Chemical Agent Identification Sets |
| C&D | Construction and Demolition |
| Cal-EPA | California Environmental Protection Agency |
| CARB | California Air Resources Board |
| CATEX | Categorical Exclusion |
| CBT | Computer Based Training |
| CEQ | Council on Environmental Quality |
| CERCLA | Comprehensive Environmental Response, Compensation and Liability Act |
| CFR | Code of Federal Regulations |
| CNDDB | California National Diversity Database |
| CO | Carbon Monoxide |
| CONEX | Container Express |
| CRWQCB | California Regional Water Quality Control Board |
| CY | calendar year |
| DESC | Defense Energy Systems Command |
| DOD | U.S. Department of Defense |
| DTSC | Department of Toxic Substance Control |
| EA | Environmental Assessment |
| EIAP | Environmental Impact Analysis Process |
| EQD | Explosive Quantity Distance |
| ERA | Environmental Restoration Account |
| ERP | Environmental Restoration Program |
| $ft^2$ | square feet |
| FIP | Federal Implementation Plan |
| FONSI | Finding of No Significant Impact |
| FRAQMD | Feather River Air Quality Management District |
| FY | Fiscal Year |
| GH | Global Hawk |
| HAZWOPER | Hazardous Waste Operations and Emergency Response |
| HQ | Headquarters |

| | |
|---|---|
| INRMP | Integrated Natural Resources Management Plan |
| LBP | lead based paint |
| LOX | Liquid Oxygen |
| MFH | Military Family Housing |
| $mg/m^3$ | milligrams per cubic meter |
| MILCON | Military Construction |
| MOBAGS | Mobility Bags |
| MOGAS | Motor Gasoline |
| NAAQS | National Ambient Air Quality Standards |
| NAVAID | Navigational Aid |
| NCO | Noncommissioned Officer |
| NEPA | National Environmental Policy Act |
| $NO_2$ | Nitrogen Dioxide |
| $NO_x$ | Nitrogen Oxide(s) |
| NRCS | National Resources Conservation Service |
| NSVAB | Northern Sacramento Valley Air Basin |
| $O_3$ | Ozone |
| O&M | Operations and Maintenance |
| OSHA | Occupational Safety and Health Administration |
| PAVE PAWS | Perimeter Acquisition Vehicle Entry Phased Array Warning System |
| P.L. | Public Law |
| Pb | Lead |
| $PM_{10}$ | Particulate Matter ≤ 10 microns in diameter |
| $PM_{2.5}$ | Particulate Matter ≤ 2.5 microns in diameter |
| ppm | parts per million |
| QOL | Quality of Life |
| RCRA | Resource Conservation and Recovery Act |
| SAAQS | State Ambient Air Quality Standards |
| SFS | Security Forces Squadron |
| SIP | State Implementation Plans |
| $SO_2$ | Sulfur Dioxide |
| SR | State Route |
| SRMC | Sustainment, Restoration, and Modernization for Contract |
| tpy | tons per year |
| TSP | Total Suspended Particulate |
| U.S.C. | United States Code |
| UFC | Unified Facilities Criteria |
| USACE | U.S. Army Corps of Engineers |
| USAF | United States Air Force |
| USEPA | U.S. Environmental Protection Agency |
| UST | Underground storage tank |
| UXO | Unexploded ordnance |
| VOC | Volatile Organic Compound |
| WINDO | Wing Infrastructure Development Outlook |
| $\mu g/m^3$ | micrograms per cubic meter |

# ENVIRONMENTAL ASSESSMENT
## WING INFRASTRUCTURE DEVELOPMENT OUTLOOK
# (WINDO) IMPLEMENTATION PLAN (FY 04-06)
# VOLUME 1
## BEALE AIR FORCE BASE, CALIFORNIA

**Beale Air Force Base**
**Environmental Flight**
**6601 B Street**
**Beale Air Force Base, CA 95903-1712**

**APRIL 2005**

**ENVIRONMENTAL ASSESSMENT OF**
**WING INFRASTRUCTURE DEVELOPMENT OUTLOOK (WINDO) IMPLEMENTATION PLAN (FY 04-06)**
**AT BEALE AIR FORCE BASE, CALIFORNIA**
**VOLUME 1**

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# 1. Introduction

## 1.1 Background

Beale Air Force Base (AFB) is a United States Air Force (USAF) base under the Air Combat Command (ACC). Beale AFB is headquarters to the 9th Reconnaissance Wing (9 RW). The 9 RW is responsible for providing national and theater command authorities with timely, reliable, high-quality, high-altitude reconnaissance products. To accomplish this mission, 9 RW is equipped with a fleet of U-2 and Global Hawk reconnaissance aircraft and associated support equipment. The wing maintains a high state of readiness in its combat support and combat service support forces for potential deployment in response to theater contingencies. The 9 RW also provides support for Beale AFB, ranging from financial, personnel, housing, maintenance, legal, recreational, and medical needs to fire protection, chaplain services, and base security.

Beale AFB is a 22,944-acre military installation in Yuba County, California, approximately 40 miles north of Sacramento, 13 miles east of Marysville, and 25 miles west of Grass Valley (see Figure 1-1). The base is between the Yuba and Bear Rivers in an area that characterizes the transition from the western Sacramento Valley east to the Sierra Nevada foothills.

## 1.2 Purpose and Need for the Proposed Action

The purpose of the Wing Infrastructure Development Outlook (WINDO) Plan at Beale AFB is to improve the facility planning process, capture the Wing Commander's vision of what infrastructure improvements are necessary to support the base's on-going mission, and link the Base General Plan to individual funding programs such as Military Construction (MILCON); Operations and Maintenance (O&M), Sustainment, Restoration, and Modernization for Contract (SRMC); Environmental Restoration Account (ERA); Defense Energy Systems Command (DESC); Anti-Terrorism/Force Protection (AT/FP); Quality of Life (QOL), Army & Air Force Exchange Service (AAFES), and other programs to provide a solid plan that both the base and ACC agree upon and understand.

Headquarters (HQ) ACC identified the need to improve base planning and streamline National Environmental Policy Act (NEPA) compliance by preparing fewer, more comprehensive documents. Therefore, they started an initiative called the WINDO Plan. The collective analysis of all appropriate WINDO projects in a single Environmental Assessment (EA) would reduce the overall analysis workload, streamline the NEPA review process, reduce project fractionation, coordinate land use planning, provide

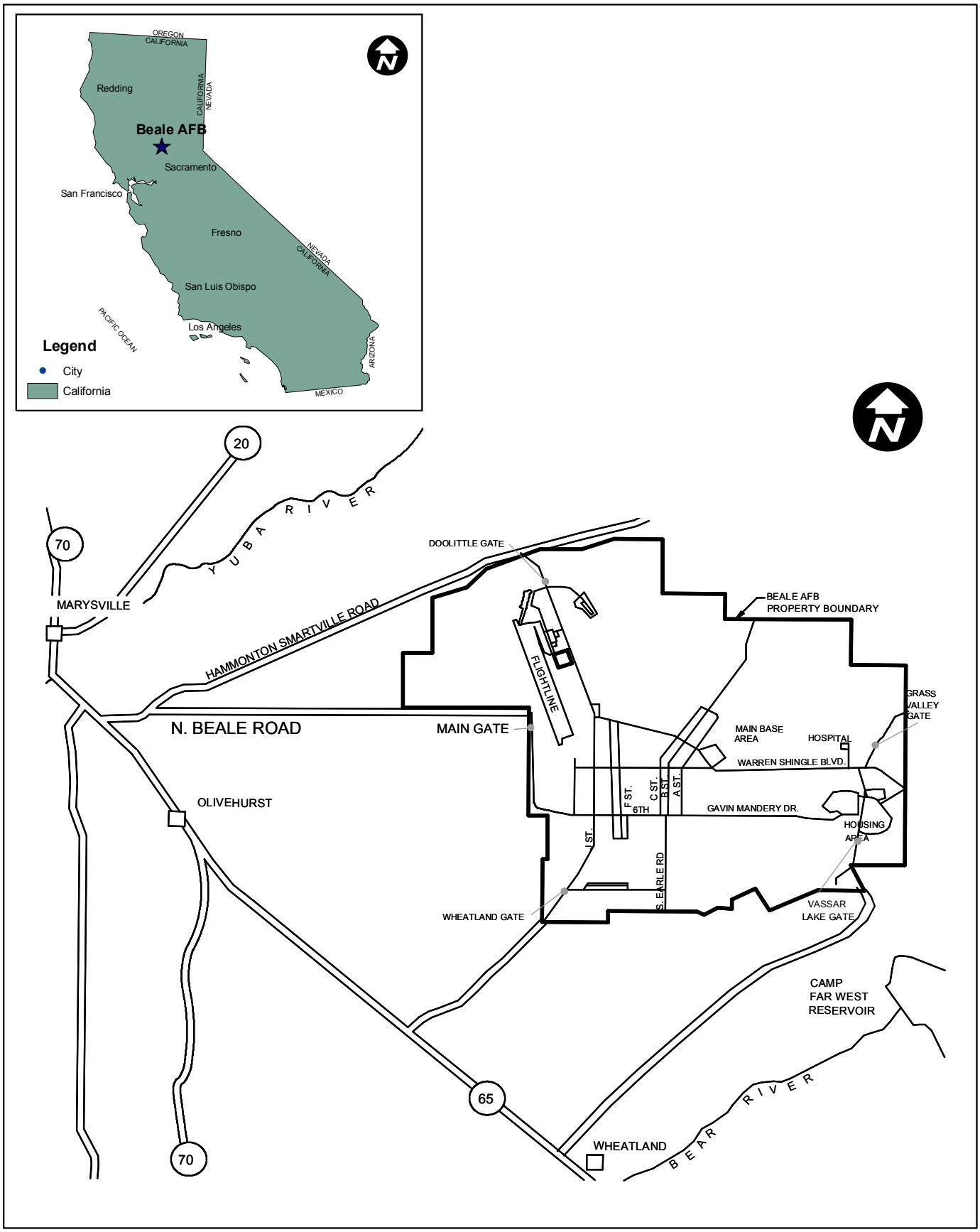


**Figure 1-1. Beale AFB and Surrounding Area**

cost savings through combining projects and maintaining a baseline for future analysis, tiering, and correct application of categorical exclusions.

## 1.3 Assessment Approach

The types of activities included in the WINDO plan involve site preparation, construction of new facilities; facility upgrades, repair and alterations of existing facilities and base infrastructure; replacement and expansion of facilities; landscaping, storm drainage system, sewer system and other utilities maintenance and upgrades; AT/FP activities; and demolition of facilities. All projects programmed for implementation during Fiscal Years (FY) 2004 through 2006 were evaluated for Environmental Impact Analysis Process (EIAP) under the WINDO effort. All projects would be located within the boundaries of Beale AFB. There are three categories of actions evaluated during the WINDO EA process:

- ***Approved Projects.*** NEPA analysis is complete. These projects either qualified as a categorical exclusion [CATEX] or were analyzed in another EA. Although not part of the Proposed Action, they may be referenced in this EA because they will occur within the same timeframe as the Proposed Action and are germane to the evaluation of cumulative environmental impacts.
- ***Concurrent Projects.*** NEPA evaluation is on-going. These projects are being analyzed in another EA. Although not part of the Proposed Action, they may be referenced in this EA because they will occur within the same timeframe as the Proposed Action and are germane to the evaluation of cumulative environmental impacts.
- ***Proposed Projects.*** NEPA analysis will be discussed in this EA.

Eighty-seven projects were evaluated under the WINDO Implementation Plan. Each of these projects was analyzed according to the approach criteria stated above. All approved and concurrent projects were verified to determine if they qualified for a CATEX, were evaluated in an EA with a signed Finding of No Significant Impact (FONSI), or are currently being evaluated in a separate EA. All remaining projects were determined to be proposed projects. All proposed projects were further evaluated to determine if they qualified for a CATEX or if they required further analysis in an EA. In order to expedite the EA timeline, those WINDO projects requiring further analysis in an EA were divided into two categories: Those projects with no potential to impact the 100-year floodplain and/or wetlands and threatened and endangered species habitat (WINDO Volume 1) and those projects potentially impacting 100-year floodplain and/or wetlands and threatened and endangered species habitat (WINDO Volume 2). A list of all 87 WINDO Implementation Plan projects by FY, a map showing their general locations, and a brief

project description are provided in Appendix A. Below is a summary of these 87 WINDO Implementation projects.

- Approved as a CATEX: 17 projects
- Approved as an EA with a signed FONSI: 13 projects
- Currently being evaluated under a separate EA: 0 projects
- Proposed to qualify for an USAF CATEX: 37 projects
- Proposed, currently being evaluated in this EA (WINDO Volume 1): 9 projects
- Proposed, currently being evaluated in WINDO EA Volume 2: 11 projects

## 1.4 Purpose of the Environmental Assessment

The objective of this EA is to disclose and analyze potentially significant environmental impacts expected from implementation of Beale AFB's WINDO Implementation Plan and development projects and long-term mission-based actions which comprise the plan (the Proposed Action). A secondary objective of this EA is to determine the potential cumulative impacts from Beale AFB's mission base-wide.

This EA has been prepared to satisfy the requirements of NEPA (Public Law [P.L.] 91-190, Title 42, United States Code [U.S.C.], Section 4321 et seq.), as amended. NEPA legislated a structured approach to environmental impact analysis that requires federal agencies to use an interdisciplinary and systematic approach in their decision making process. This process evaluates potential environmental consequences associated with a proposed action and considers alternative courses of action. The intent of NEPA is to protect, restore, and enhance the environment through well-informed federal decisions. In addition, this document will be prepared in accordance with Air Force Instruction (AFI) 32-7061, EIAP, Title 32 Code of Federal Regulations [CFR] Section 989), which implements Section 102(2) of NEPA and regulations established by the Council on Environmental Quality (CEQ).

# 2. Proposed Action and Alternatives

This section describes those projects that will be evaluated as part of the Proposed Action (EA Volume 1) and discusses the No Action Alternative.

## 2.1 Proposed Action

The Proposed Action consists of nine projects. These nine projects (construction, demolition, and renovation) are listed in Table 2-1. Each of these projects was determined to require analysis in an EA because of the scope of the project, magnitude of the action, and potential impacts associated with the Proposed Action. All nine of these projects are located in four areas of the base: Flightline, Main Base, Industrial (Bulk Fuels), and Military Family Housing (MFH). Each projects location is shown in greater detail in Figures 2-1 to 2-4.

**Table 2-1. Projects Analyzed in this EA**

| Program FY | Project Title | Project Number | Project Type | Area Disturbed |
|---|---|---|---|---|
| 2004 | Demolish MOGAS Storage Tanks, 491-499 | 040025<br>Ref. No. 25 | DESC | 17,122 $ft^2$<br>0.39 acres |
| 2004 | Construct Running Path at O'Malley Field | 980022<br>Ref. No. 37 | QOL | 1,363,055 $ft^2$<br>31.29 acres |
| 2004 | Construct LOX Storage Facility | 040024<br>Ref. No. 39 | O&M | 10,365 $ft^2$<br>0.24 acre |
| 2005 | Construct 940 ARW AGS Squadron Maintenance and Administration Facility | 010085<br>Ref. No. 62 | O&M | 5,156 $ft^2$<br>0.12 acre |
| 2005 | Construct 940 SFS Mobility Equipment Storage Facility | 020048<br>Ref. No. 63 | O&M | 16,629 $ft^2$<br>0.38 acre |
| 2005 | Construct Shopette Gas Service Station and Car Wash | 4793-03-000001<br>Ref. No. 64 | AAFES | 135,524 $ft^2$<br>3.11 acres |
| 2006 | Demolish NCO Club, Building 5800 | 060006<br>Ref. No. 82 | O&M | 44,848 $ft^2$<br>1.03 acres |
| 2006 | Construct 2 Bay Pre-flight Hangar | 061009<br>Ref. No. 86 | MILCON | 21,988 $ft^2$<br>0.50 acre |
| 2006 | Construct 940 ARW Consolidated Storage Facility | 061008<br>Ref. No. 87 | O&M | 23,672 $ft^2$<br>0.54 acre |

| | | | |
|---|---|---|---|
| AGS | Aircraft Generation Squadron | AAFES | Army & Air Force Exchange Service |
| ARW | Air Refueling Wing | DESC | Defense Energy Systems Command |
| $ft^2$ | square feet | LOX | liquid oxygen |
| MOGAS | motor gasoline | MILCON | military construction |
| NCO | noncommissioned officers | O&M | operations and maintenance |
| QOL | quality of life | SFS | Security Forces Squadron |

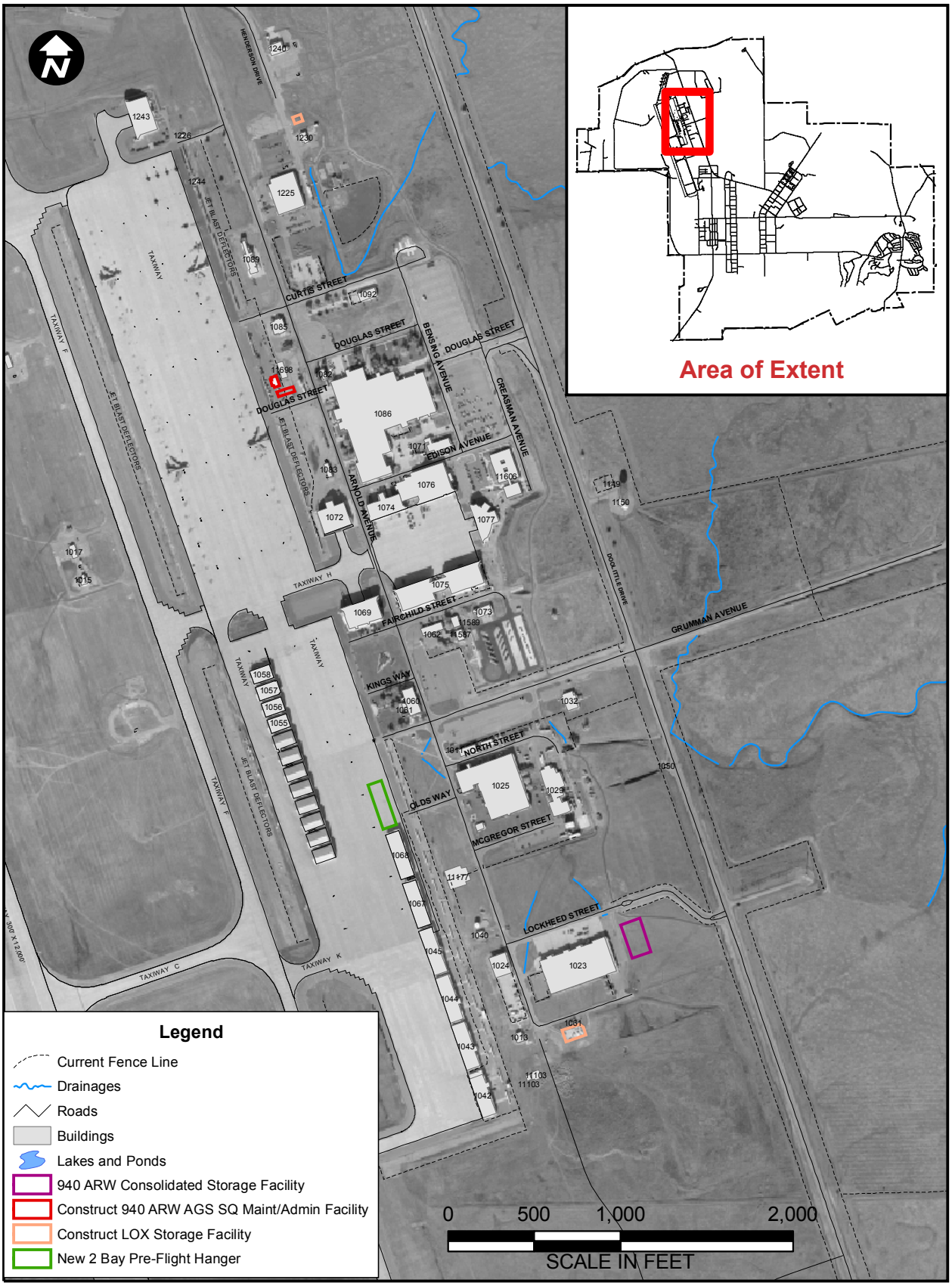


**Figure 2-1. WINDO Project Boundaries Near Flightline**

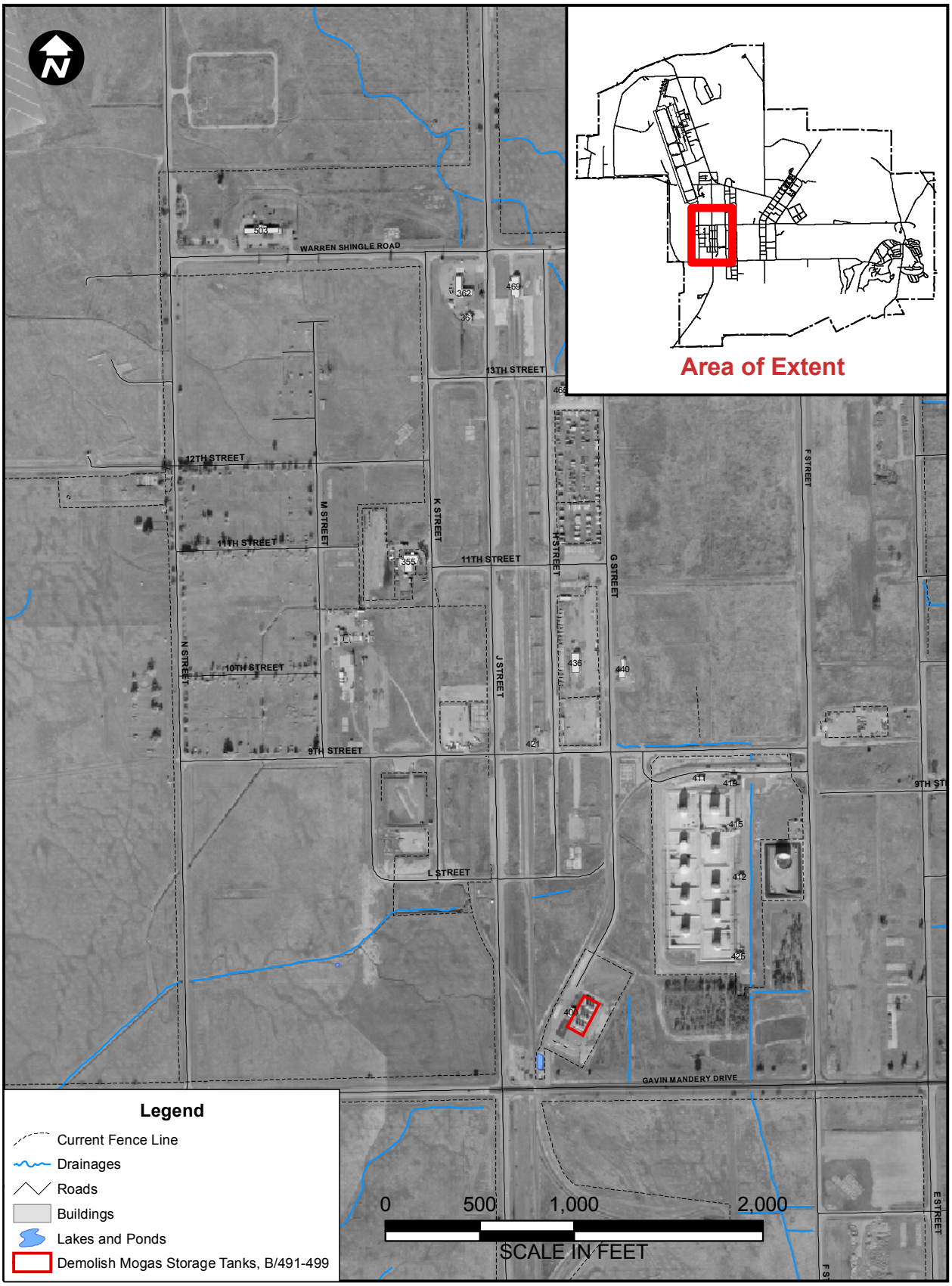


**Figure 2-2. WINDO Project Boundaries in Vicinity of Industrial Bulk Fuels Area**

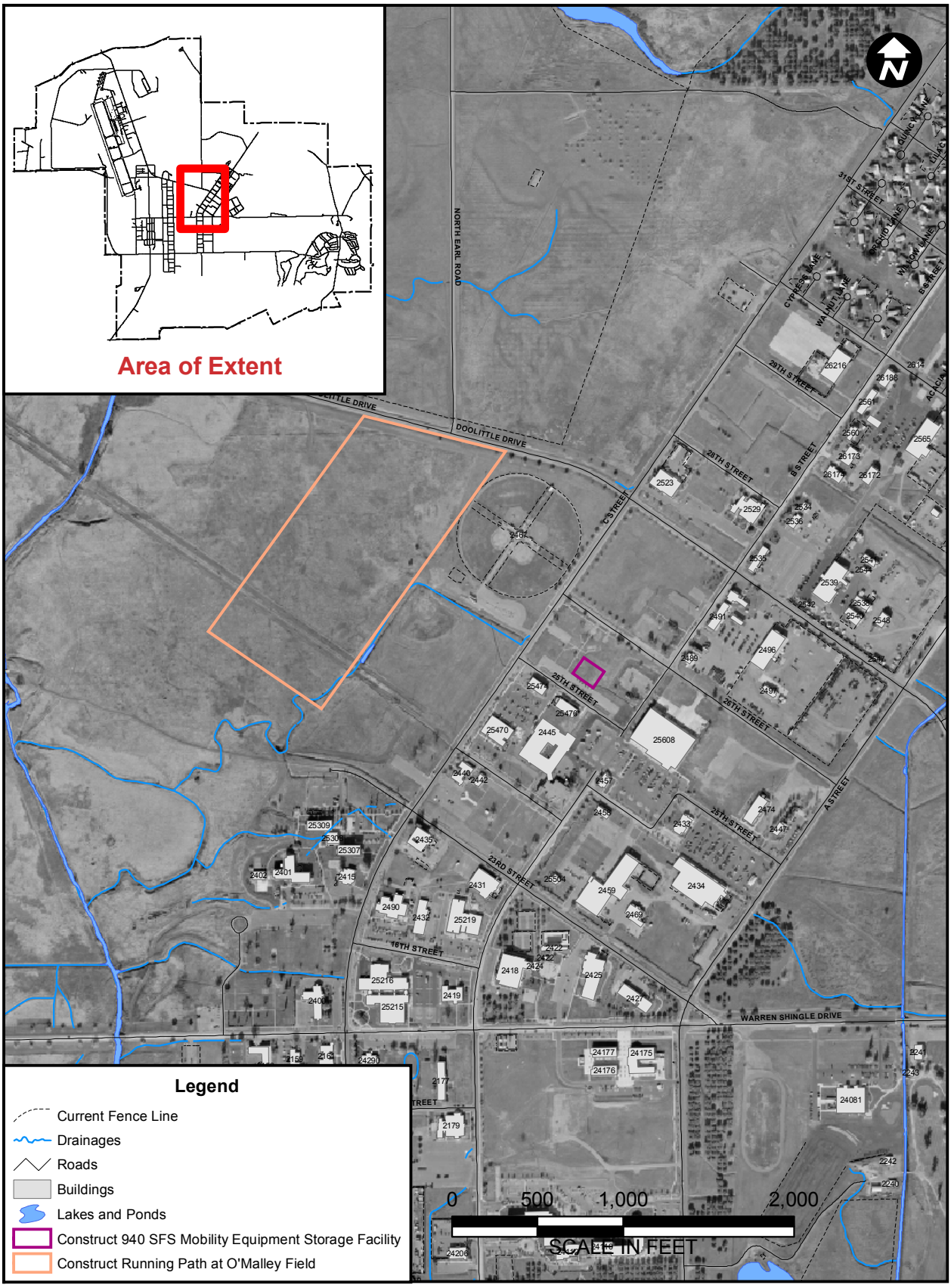


**Figure 2-3. WINDO Project Boundaries Near Main Base**


**Figure 2-4. WINDO Project Boundaries Near Military Family Housing**

### 2.1.1 Project Descriptions

***Demolish Motor Gasoline (MOGAS) Storage Tanks, 491 to 499 (See Figure 2-2).*** This site is currently used as a ground fuels storage area and is surrounded by an 8-foot cyclone fence. This area includes a rail spur, fuel loading racks and connections, a pump house and distribution pit, nine fuel tanks with concrete secondary containment, fuel truck loading racks, and related-piping. Four of the nine tanks are currently in use to store and distribute diesel #2 and unleaded fuel for use in government vehicles and equipment. Each of the unleaded tanks has a 595 barrel capacity and each of the diesel #2 tanks has a 477 barrel capacity. All of these tanks were constructed in 1953. Commercial trucks deliver fuel to the off-loading racks on the western portion of the facility. Fuel is stored in the tanks and distributed into government refueling trucks through the reloading racks on the south side of the facility. Access to the site is provided from the south via Gavin-Mandery Drive and from the north via the Bulk Fuels access road. These access points are controlled by locked security gates. A soil vapor extraction and treatment system has been operating at this facility (Environmental Restoration Program [ERP] Site 18) for more than five years and would remain in place to remediate solvent contamination.

The MOGAS facility would be closed upon completion of the proposed government gas station near the flightline in the summer of 2005. This site would no longer be required after this gas station is completed. Therefore, these tanks would be demolished including their supporting infrastructure such as fuel storage racks and connections, pump house and distribution pit, secondary containment pad, fuel truck loading racks, and piping. All fuel and vapors would be removed from the MOGAS tanks prior to commencing demolition activities. All fuel-contaminated soils would be removed or treated. The tanks and supporting infrastructure would be disposed of in an approved construction and demolition (C&D) landfill by the contractor.

***Construct Running Path at O'Malley Field (See Figure 2-3).*** Currently, personnel on Beale AFB use the rubberized running track near the Recce Point Club (Building 24081) and existing roadways for running and other exercise-related activities. To enhance the QOL, recreation, and personal training experience of base personnel, a new paved running path with landscaping would be constructed west of the O'Malley baseball fields. The proposed running path would be approximately 5,728 feet long. This proposed running path would help expand the base physical training capability and enhance the O'Malley sports complex. This path is required because new beddown requirements for GH and Deployable Ground Station missions would increase populations on Beale AFB. This would reduce the capability of the base's current infrastructure to support increased fitness program requirements to base personnel.

***Construct Liquid Oxygen (LOX) Storage Facility (See Figure 2-1).*** The current LOX facility consists of a temporary trailer and containment pad surrounded by a chain-link fence, and two 10,000-gallon LOX storage tanks. The current facility cannot adequately support the current administration and mission requirements. In addition, fuel transfer vehicles must transport LOX across the entire length of the flightline or on adjacent roadway to reach their mission destinations. Therefore, the base proposes to remove the LOX trailer from its existing site, construct a level, single-poured concrete containment pad, move the two LOX storage tanks to the new containment area, and construct a 1,200 square feet ($ft^2$) LOX facility. The proposed storage facility is needed for maintenance of equipment required to be certified oxygen clean, prior to use. The project also consists of installing supporting piping for sewage and water. Electricity, water, and security lighting are available on-site. The proposed LOX facility would be constructed in accordance with Air Force Occupational Safety and Health (AFOSH) Standard 91-67 and AFI 23-201 standards and requirements.

***Construct 940 ARW Aircraft Generation Squadron (AGS) Squadron Maintenance/Administration Facility (See Figure 2-3).*** The AGS management and administration are currently separated from flightline operations, creating an inefficient, ineffective organization with degradation to command and control missions of the squadron. Therefore, the base proposes to construct a 3,000 $ft^2$ AGS Administration Facility to house the 940 ARW/AGS personnel near the newly constructed AGS facility. Functional areas within this proposed facility would include administrative areas for command staff and the squadron maintenance support flight personnel. Currently, the 940 ARW/AGS personnel are housed in a modular facility on Dock 5. Construction of collocated facilities is essential to creating an efficient and effective command and control of the AGS.

Construction would include preparing the project site, constructing the foundation, and erecting a pre-engineered building to comply with base architectural design standards and connect to existing utilities. Work would include interior partitions, plumbing, electric communications infrastructure, and all other necessary support.

The project site is currently undeveloped and is a disturbed area surrounded by various flightline operations and land uses. The site consists of native and non-native grasses and small areas of disturbed soil. In addition, water drainage from the north flows through the project site into an existing parking lot to the west and then into a storm drain located on the project site. No new parking lots would be required as part of the Proposed Action.

***Construct 940 Security Forces Squadron (SFS) Mobility Equipment Storage Facility (See Figure 2-3).*** Mobility equipment such as mobility bags (MOBAGS), all terrain vehicles, video equipment, night vision devices, thermal imaging units, and other valuable equipment is stored in an uncovered compound. Equipment left exposed to the elements could become unserviceable if left under current conditions. Therefore, the base proposes to construct a Mobility Equipment Storage Facility with a split block construction to match existing facilities and comply with base architectural design standards. Heating, air, latrine, and phones would be included.

***Construct Shoppette Gas Service Station and Car Wash (See Figure 2-4).*** Currently, AAFES owns and operates a Shoppette Gas Service Station near MFH on the east side of Camp Beale Highway, north of the Vassar Lake Gate. The purpose of this project would be to provide one-stop shopping services in one convenient location to better serve base personnel and visitors. In addition, the project would replace the existing undersized and outdated shopette at Building 3304, provide a much needed POV car wash facility to base personnel, and add another fast food facility. AAFES proposes to construct 8,652 $ft^2$ shoppette, which would include convenience retail food service, gasoline service station and pumps, laundry dry-cleaning drop-off/pickup, food service, and 900 $ft^2$ carwash. This facility would be located on the west side of Camp Beale Highway north of the Vassar Lake Gate and would be approximately 3 acres. After the proposed facility is constructed, the existing Shoppette Gas Service Station would either be demolished or turned over to the USAF.

***Demolish NCO Club, Building 5800 (See Figure 2-4).*** This 21,916 $ft^2$ facility was constructed in 1960 and is currently unoccupied. Building 5800 was used as an NCO club until the new club was constructed in 1999. The current facility is used to store equipment and various other items by Base Services and is used by Security Forces for dog certification classes. In addition to Building 5800, adjacent infrastructure and equipment would be demolished. Existing parking areas would be abandoned in place. C&D waste would be the responsibility of the contractor. All C&D waste would be disposed of in an approved C&D landfill.

***Construct 2-Bay Pre-flight Hangar (See Figure 2-1).*** Currently, there are no excess facilities of adequate size and configuration to support the Global Hawk (GH) maintenance mission at Beale AFB. Therefore, the base proposes to construct a 35,521-$ft^2$ two-bay GH maintenance hangar and a 107,639 $ft^2$ aircraft parking apron north of Building 1068 on Taxiway J. The hangar would consist of steel frames, masonry walls, standing seam metal roof, concrete floor slab, high expansion foam fire suppression system, utilities, pavements, site improvements, communication support, and remediation of contaminated soil from ERP Sites SD-32 and ST-22 (ACC 2003). The aircraft parking apron would

consist of airfield concrete, aircraft tie-down and grounding points, apron markings, and apron drainage improvements. The hangar would be used to support aircraft maintenance, repair, and inspection activities for the GH mission. The hangar would also be used to store tools, support equipment maintenance, and facilitate aircraft parts receiving shipping and storage, and administration offices. The apron is required to effectively support the new GH mission when it is integrated into the existing base parking areas along the flightline.

***Construct 940 ARW Consolidated Storage Facility (See Figure 2-1).*** The 940 ARW is required by the 9 RW to consolidate its equipment in a single 12,000 $ft^2$ building. Currently, the equipment is stored in numerous indoor and outdoor locations around the flightline area. The SR-71 hanger that accounts for a significant amount of 940 ARW storage space is slated for demolition to create room for the GH aircraft. Other major storage facilities are container express (CONEX) boxes that are scattered around the flightline area. GH displaced the 940 ARW Dock 6 operations, which force staff and storage into substantially smaller quarters at the far end of the flightline. Constructing a centralized storage facility would provide 940 ARW with positive oversight protecting valuable equipment, allow centralized control and accountability, and consolidate War Reserve Material storage ensuring the 940 ARW meets deployment timelines. The proposed location for the Consolidated Storage Facility is west of Building 1023 near Lockheed Street and Doolittle Drive.

## 2.2 No Action Alternative

***Demolish MOGAS Storage Tanks, 491-499.*** Under the No Action Alternative, MOGAS Storage Tanks 491 to 499 would not be demolished and would be abandoned in place. MOGAS fuel would be obtained from the new MOGAS station on the flightline. However, this alternative would not allow Bulk Fuels to use this space for future construction.

***Construct Running Path at O'Malley Field.*** Under the No Action Alternative, no running track would be constructed and base personnel would have to utilize existing fitness areas. Medical physicians state that injuries from running should decrease as a result of the proposed path material. If the running path is not constructed, the potential for injuries could rise. Therefore, Beale AFB would not be able to reach its fitness goals potential and could adversely affect unit morale and retention.

***Construct LOX Storage Facility.*** Under the No Action Alternative, the LOX facilities and infrastructure would remain in its current location and configuration. The LOX unloading and loading operations would still be located on the opposite end of the flightline from the main LOX users. LOX would have to be transported the entire length of the flightline. This alternative would cause the LOX missions users to

operate in an ineffective manner, which would delay mission requirements. In addition, transporting LOX across the entire length of the flightline could present safety problems.

***Construct 940 ARW AGS Squadron Maintenance/Administration Facility.*** Under the No Action Alternative, 940 ARW/AGS management and administration personnel would continue to be housed in a modular facility distant from the rest of the squadron. This could impact the mission and efficiency of the 940 ARW.

***Construct 940 SFS Mobility Equipment Storage Facility.*** Under the No Action Alternative, SFS equipment would continue to be stored in its current location and configuration. If equipment is stored in the uncovered compound, equipment would continue to be exposed to the elements and become unserviceable.

***Construct Shoppette Gas Service Station and Car Wash.*** Under the No Action Alternative, the base would continue to operate its gasoline and food service in its current condition. No POVs car wash facility is located on base and food service locations are limited. The No Action Alternative would not provide adequate food services to base personnel and visitors and POV owners would continue to wash their vehicles off base.

***Demolish NCO Club, Building 5800.*** Under the No Action Alternative, Building 5800 would not be demolished and would be abandoned in place. However, Building 5800 would continue to deteriorate and incur high maintenance and energy costs.

***Construct 2-Bay Pre-flight Hangar.*** Under the No Action Alternative, all weather support requirements of the GH would be integrated into existing hangar requirements at Beale AFB. The new GH mission requirement would force many maintenance operations for both existing airframes and GH airframes to be done outside when it is recommended to be accomplished under cover. If no hangar is constructed, GH and other base mission requirements could be adversely hampered.

***Construct 940 ARW Consolidated Storage Facility.*** Under the No Action Alternative, mission support equipment would continue to be stored in various locations throughout the base. In addition, the SR-71 hanger that contains more than 8,000 $ft^2$ of 940 ARW storage is slated for demolition in FY 2007 and there would be no alternate location for the equipment. The base also wants to eliminate all CONEX boxes on the installation.

The No Action Alternative would not address USAF mission and force protection concerns at Beale AFB. However, inclusion of the No Action Alternative is prescribed by the CEQ regulations and therefore, will be carried forward for further analysis in the EA.

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# 3. Affected Environment

Section 3.0 describes the environmental and socioeconomic resources and conditions most likely to be affected by the proposed construction projects. This section provides information to serve as a baseline from which to identify and evaluate environmental and socioeconomic changes likely to result from implementation of the Proposed Action. Baseline conditions represent current conditions. The potential environmental and socioeconomic impacts of the Proposed Action and No Action Alternative on the baseline conditions are described in Section 4.0.

In compliance with NEPA, CEQ guidelines, and 32 CFR Part 989, as amended, the description of the affected environment focuses on those resources and conditions potentially subject to impacts. Some environmental resources and conditions that are often analyzed in an EA have been omitted from this analysis. The following details the basis for such exclusions:

- ***Cultural Resources.*** All sites within 100 feet of each project boundary were evaluated for potential impacts using base cultural resource maps in the Cultural Resources Management Plan (BAFB 1998) and coordinating with the base Cultural Resources Manager. No cultural resources or artifacts were identified in the project areas of the Proposed Action. Therefore, there would be no impact to cultural resources at Beale AFB. Accordingly, USAF has omitted detailed examination of cultural resources. If an unexpected archaeological discovery occurs during construction, the unanticipated archeological discoveries procedures, as defined in the Beale AFB Cultural Resource Management Plan (BAFB 1998), would be followed. If archaeological properties are discovered, excavation and disturbance of the site would cease. The Cultural Resource Manager would be notified immediately. The Cultural Resource Manager would take actions to evaluate the discovery and provide guidance to the project engineer on any actions that should be taken to provide appropriate management treatment of the resource.
- ***Land Use.*** All activities associated with the Proposed Action would be consistent with present and foreseeable land use patterns at Beale AFB. Implementation of the Proposed Action would not significantly alter the existing land use at Beale AFB. Accordingly, the USAF has omitted detailed examination of land use.
- ***Noise.*** Implementation of the Proposed Action does not involve permanent alterations to aircraft inventories, operations, or missions. No new permanent ground-based heavy equipment operations are included in the Proposed Action. No activity included in the Proposed Action would result in a situation where residences would be impacted by an increase in present ambient

noise levels. Furthermore, noise produced by construction and demolition activities associated with the Proposed Action would not significantly affect sensitive receptors. The closest sensitive noise receptors are more than 0.5 miles from the project areas. Accordingly, USAF has omitted detailed examination of noise.

- ***Socioeconomics.*** The Proposed Action does not involve any activities that would directly affect off-base activities, or directly or indirectly contribute to changes in socioeconomic resources. There would be no change in the number of personnel assigned to Beale AFB and no changes in area population or associated changes in demand for housing and services. Accordingly, USAF has omitted detailed examination of socioeconomics in this EA.
- ***Environmental Justice.*** The Proposed Action does not involve any activities that would contribute to changes in low-income or minority populations because all work would be performed within the base boundary. Accordingly, USAF has omitted detailed examination of environmental justice.

## 3.1 Air Quality

Air quality in a given location is determined by the concentration of various pollutants in the atmosphere. National Ambient Air Quality Standards (NAAQS) are established by the U.S. Environmental Protection Agency (USEPA) for "criteria pollutants," including ozone ($O_3$), carbon monoxide (CO), nitrogen dioxide ($NO_2$), sulfur dioxide ($SO_2$), particulate matter equal to or less than 10 microns in diameter ($PM_{10}$), particulate matter equal to or less than 2.5 microns in diameter ($PM_{2.5}$), and lead (Pb). NAAQS represent maximum levels of background pollution in the ambient air that are considered safe, with an adequate margin of safety to protect public health and welfare (see Table 3-1).

The California Environmental Protection Agency (Cal-EPA), California Air Resources Board (CARB) has delegated responsibility for implementation of the federal Clean Air Act (CAA) and California CAA to local air pollution control agencies. The Proposed Action is in the Feather River Air Quality Management District (FRAQMD) and is subject to rules and regulations developed by the FRAQMD.

The State of California adopted the NAAQS and promulgated additional State Ambient Air Quality Standards (SAAQS) for criteria pollutants. The California standards are more stringent than the federal primary standards. Table 3-1 presents the primary and secondary NAAQS and SAAQS that apply to air quality in California.

**Table 3-1. National and California Ambient Air Quality Standards**

| Pollutant | Standard Value | Standard Type |
|---|---|---|
| **Carbon Monoxide (CO)** | | |
| 8-hour Average | 9 ppm (10 mg/$m^3$) | National Primary and CA |
| 1-hour Average | 35 ppm (40 mg/$m^3$) | National Primary |
| 1-hour Average | 20 ppm (23 mg/$m^3$) | CA |
| **Nitrogen Dioxide ($NO_2$)** | | |
| Annual Arithmetic Mean | 0.053 ppm (100 µg/$m^3$) | National Primary and Secondary |
| 1-hour Average | 0.25 ppm (470 µg/$m^3$) | CA |
| **Ozone ($O_3$)** | | |
| 1-hour Average | 0.12 ppm (235 µg/$m^3$) | National Primary and Secondary |
| 8-hour Average | 0.08 ppm (157 µg/$m^3$) | National Primary and Secondary |
| 1-hour Average | 0.09 ppm (180 µg/$m^3$) | CA |
| **Lead (Pb)** | | |
| Quarterly Average | 1.5 µg/$m^3$ | National Primary and Secondary |
| Monthly Average | 1.5 µg/$m^3$ | CA |
| **Particulate ≤ 10 microns ($PM_{10}$)** | | |
| Annual Arithmetic Mean | 50 µg/$m^3$ | National Primary and Secondary |
| 24-hour Average | 150 µg/$m^3$ | National Primary and Secondary |
| Annual Arithmetic Mean | 20 µg/$m^3$ | CA |
| 24-hour Average | 50 µg/$m^3$ | CA |
| **Particulate ≤ 2.5 microns ($PM_{2.5}$)** | | |
| Annual Arithmetic Mean | 15 µg/$m^3$ | National Primary and Secondary |
| Annual Arithmetic Mean | 12 µg/$m^3$ | CA Primary and Secondary |
| 24-hour Average | 65 µg/$m^3$ | National and CA Primary and Secondary |
| **Sulfur Dioxide ($SO_2$)** | | |
| Annual Arithmetic Mean | 0.030 ppm (80 µg/$m^3$) | National Primary |
| 24-hour Average | 0.14 ppm (365 µg/$m^3$) | National Primary |
| 3-hour Average | 0.50 ppm (1300 µg/$m^3$) | National Secondary |
| 1-hour Average | 0.25 ppm (655 µg/$m^3$) | CA |
| 24-hour Average | 0.04 ppm (105 µg/$m^3$) | CA |

CA – California
ppm - parts per million
mg/$m^3$ - milligrams per cubic meter
µg/$m^3$ - micrograms per cubic meter
NOTE: Concentration expressed first in units in which it was promulgated. Equivalent concentrations are given in parentheses for those standards promulgated in units of ppm.

Under the General Conformity Rule, the CAA prohibits federal agencies from performing projects that do not conform to a USEPA-approved State Implementation Plan (SIP). In 1993, USEPA developed final rules for how federal agencies must determine air quality conformity prior to implementing a proposed

federal action. Under these rules, certain actions are exempt from conformity determinations, while others are assumed to be in conformity if total project emissions are below *de minimis* levels established under 40 CFR 93.153. Total project emissions include both direct and indirect emissions caused by the federal action.

USEPA classifies the air quality in an air quality control region (AQCR) or in sub-areas of an AQCR according to whether the concentration of criteria pollutants in ambient air exceeds the primary or secondary NAAQS. All areas within each AQCR are therefore designated as either "attainment," "non-attainment," or "unclassified" for each of the six criteria pollutants. Attainment means that the air quality within an AQCR is better than the NAAQS, nonattainment indicates that air quality exceeds NAAQS, and an unclassifiable air quality designation by USEPA means that there is not enough information to appropriately classify an AQCR, so the area is considered attainment.

The General Conformity Rule requires that any federal action meet the requirements of a SIP or federal Implementation Plan (FIP). More specifically, CAA Conformity is assured when a federal action does not cause a new violation of the NAAQS, contribute to an increase in the frequency or severity of violations of NAAQS, or delay the timely attainment of any NAAQS, interim progress milestones, or other milestones toward achieving compliance with the NAAQS.

The conformity rule applies only to actions in nonattainment or maintenance areas and considers both direct and indirect emissions. The rule applies only to federal actions that are considered "regionally significant" or where the total emissions from the action meet or exceed the *de minimis* thresholds. An action is regionally significant when the total nonattainment pollutant emissions exceed 10 percent of the AQCR's total emissions inventory for that nonattainment pollutant. If a federal action meets the *de minimis* threshold requirements and is not considered regionally significant, then a full Conformity Determination is not required.

Beale AFB is in Yuba County which is within the Sacramento Valley Intrastate AQCR. FRAQMD is responsible for implementing and enforcing state and federal air quality regulations in Yuba County, Sutter County, and portions of Northern Sacramento Valley Air Basin (NSVAB). The air quality in the FRAQMD has been characterized by USEPA as a *moderate* transitional nonattainment area for $O_3$ and unclassifiable/attainment for all other criteria pollutants.

## 3.2 Biological Resources

This section is an assessment of biological communities to include wildlife, vegetation, and wetland resources in the project areas. It is based on the following information:

- Integrated Natural Resources Management Plan (INRMP) for Beale AFB (BAFB 1999);
- Plant, wildlife, and wetland surveys conducted from January to July 2004;
- California Department of Fish and Game's California National Diversity Database (CNDDB); and
- Base wetland delineations.

The INRMP was developed to use as a tool in managing the natural resources found on the base. Most of the information below was obtained from the Beale AFB INRMP. Habitat communities on Beale AFB are shown in Figure 3-1.

This section describes the following aspects of the affected environment:

- Annual grasslands
- Special-Status Species

**Annual Grasslands**

Annual grassland is an upland plant community (habitat) dominated by nonnative grasses, but containing a diverse assemblage of native and nonnative forbs. Nonnative annual grasses and weedy annual and perennial forbs dominate this habitat type. Vegetation in the annual grassland is dominated by species that are rarely found in wetlands.

A majority of the Proposed Action occurs in annual grasslands. Most of the annual grasslands affected by the Proposed Action are previously disturbed and dominated by ruderal vegetation. The lower species diversity common in ruderal habitat generally provides less value to wildlife than the higher species diversity found in native annual grassland habitat. Scattered native wildflower species that represent remnants of the original vegetation are also present in less-disturbed sites.

Annual grasslands at Beale AFB provide foraging habitat and cover to numerous locally and regionally common wildlife species. The majority of annual grasslands that would be affected by the Proposed Action have been subject to disturbances from human activity. Wildlife values of these areas are

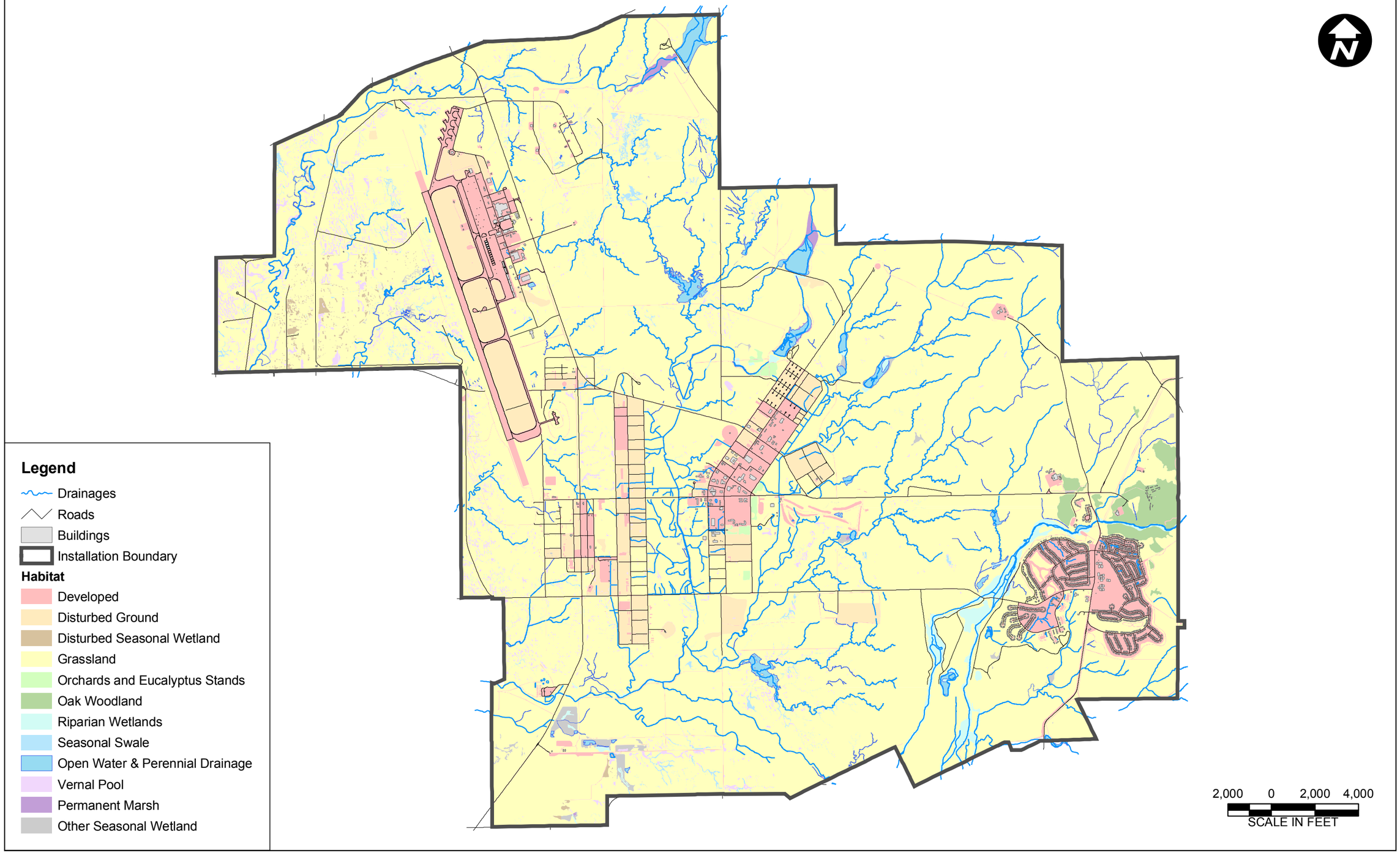


**Figure 3-1. Habitat Types on Beale AFB**

considered low. No vernal pool or wetlands occur in the project area. Therefore, wetlands will not be discussed further in the EA. No riparian areas occur in the project area. Therefore, riparian areas will not be discussed further in this EA.

**Special-Status Species**

**Vegetation**

There are four plant species formally protected under federal or state law: Hartweg's golden sunburst, Hairy Orcutt grass, Hoover's spurge, and Slender Orcutt grass. None of these four have been observed on Beale AFB. A fifth species – Greene's tuctoria – is proposed for federal listing, but has not been observed on Beale AFB.

**Animals**

There are thirteen animal species formally protected under federal or state law. Of those thirteen:

- The federally-protected vernal pool fairy shrimp and vernal pool tadpole shrimp habitat has not been observed on or adjacent to the project site.
- The federally- protected bald eagle is an irregular migrant to the area, and cannot be considered to be using the base for more than occasional foraging.
- The state-protected white-tailed kite – present on the base year-round – can not be considered to use the project site for more than occasional foraging.
- The state-protected golden eagle – a year-round visitor to the base – cannot be considered to use the project site for more than occasional foraging.
- The state-protected American peregrine falcon - an irregular visitor to the base – cannot be considered to use the project site for more than occasional foraging.
- The federally protected valley elderberry longhorn beetle has not been observed on or adjacent to the project site as there is no riparian habitat within the project boundaries.
- The federally protected giant garter snake habitat has not been observed on or adjacent to the project site as there are no drainages within the project boundaries.
- The state-protected black rail has not been observed on the project site.
- The state-protected Swainson's hawk and greater sandhill crane have not been observed on the project site.
- The federally protected Central Valley steelhead and Chinook salmon have not been observed on the project site as there are no waterways within the project boundaries.

- In addition, many bird species present on the project site (including those identified above) are subject to regulation under the Migratory Bird Treaty Act.

## 3.3 Geological Resources

An area's geological resources typically consist of surface and subsurface materials and their inherent properties. Soil depth, structure, elasticity, strength, shrink-swell potential, and erodibility determine a soil's ability to support man-made structures and facilities. Soils typically are described in terms of their series or association, slope, physical characteristics, and relative compatibility or constraints with respect to particular construction activities and types of land use.

The base is on the boundary between the Great Valley and Sierra Nevada Geologic Provinces and contains characteristics of both (BAFB 1999). A majority of Beale AFB has the geologic characteristics of river floodplains and channels of the Modesto Formation, low alluvial plains and fans of the riverbank formation, and dissected uplands of the Mehrten and Laguna Formations. The remainder of the base consists of metavolcanic rock characteristic of the Sierra Nevada foothills.

There are 10 soil series found on Beale AFB. These were grouped by the National Resources Conservation Service (NRCS) according to their topographic position and drainage characteristics. These soil types are Auburn loam, Argonaut-Auburn loams, Auburn-Sobrante loams, Auburn-Sobrante-rock outcrop complex, Conejo loam, Pardee gravelly loam, Pardee-Rancho Seco complex, Perkins loam, Redding-Corning complex, and San Joaquin loam (BAFB 2001). The LOX storage facility, 940 ARW AGS Squadron maintenance/administration facility, 940 SFS mobility storage facility, 2-bay pre-flight hangar, and 940 ARW consolidated storage facility projects are located in Redding-Corning complex. The demolish MOGAS Storage Tanks 491 to 499 project is located in San Joaquin loam. The running path at O'Malley Field project is located in San Joaquin loam, Perkins loam, and Redding-Corning complex. The demolish Building 5800 and construct shopette gas service station and car wash projects are located in Auburn-Sobrante loam.

## 3.4 Hazardous Materials and Wastes Management

Hazardous substances are defined by the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) as any substance with physical properties of ignitability, corrosivity, reactivity, or toxicity that can cause an increase in mortality, a serious irreversible illness, incapacitating reversible illness, or pose a substantial threat to human health or the environment. Hazardous waste is defined by the Resource Conservation and Recovery Act (RCRA) as any solid, liquid, contained gaseous, or

semisolid waste, or any combination of wastes that poses a substantial present or potential hazard to human health or the environment. DOD has also developed the ERP to facilitate thorough investigation and cleanup of contaminated sites on military installations. The ERP is designed to identify, confirm, and clean up problems arising from past releases of hazardous substances and petroleum products into the environment.

***Hazardous Materials and Waste.*** 9th Civil Engineering Squadron/Environmental Flight (9 CES/CEV) is responsible for the hazardous material and waste plans for the installation. In conformance with the policies established by Air Force Policy Directive (AFPD) 32-70, 9 CES/CEV has developed plans to manage hazardous materials, hazardous wastes, and special hazards on the base. Base and contractor personnel collect hazardous wastes at initial accumulation points. From the initial accumulation points, wastes are taken to the Centralized Accumulation Site on the base and shipped to off-base disposal facilities. In accordance with the Beale AFB Hazardous Waste Management Program, hazardous wastes are stored on base for a maximum of 75 days.

***Asbestos-Containing Material (ACM).*** A survey was performed of buildings at Beale AFB to locate, identify, and evaluate any materials containing asbestos. Materials that might contain asbestos include thermal-system insulation and floor tiles. ACM is removed on an as-needed basis to minimize health risks from release of asbestos fibers during normal activities, maintenance, renovation, or demolition.

***Lead-Based Paint (LBP).*** Beale AFB has conducted a survey of buildings for the presence of LBP. The survey mainly focused on child-occupied facilities. The results of the survey are maintained in an LBP database at Civil Engineering.

***ERP.*** The ERP at Beale AFB began in 1984 with a base-wide records search that identified 16 ERP sites for further investigation (see Figure 3-2). Primary contaminants in soil and water include fuels, oils, pesticides, herbicides, waste solvents, and inorganic compounds. Progress under ERP is closely coordinated with various regulatory agencies, including the Cal-EPA Department of Toxic Substance Control (DTSC) and the California Regional Water Quality Control Board (CRWQCB).

Projects included in the Proposed Action are within or in close proximity to four ERP sites: SD-23, Ninth Transportation Refueling Vehicle Maintenance Shop; SD-32, Building 1086; ST-18, Bulk Fuel Storage Facility, and ST-22, Underground Storage Tanks (UST) (Basewide) (ACC 2003). These sites are described in more detail below.

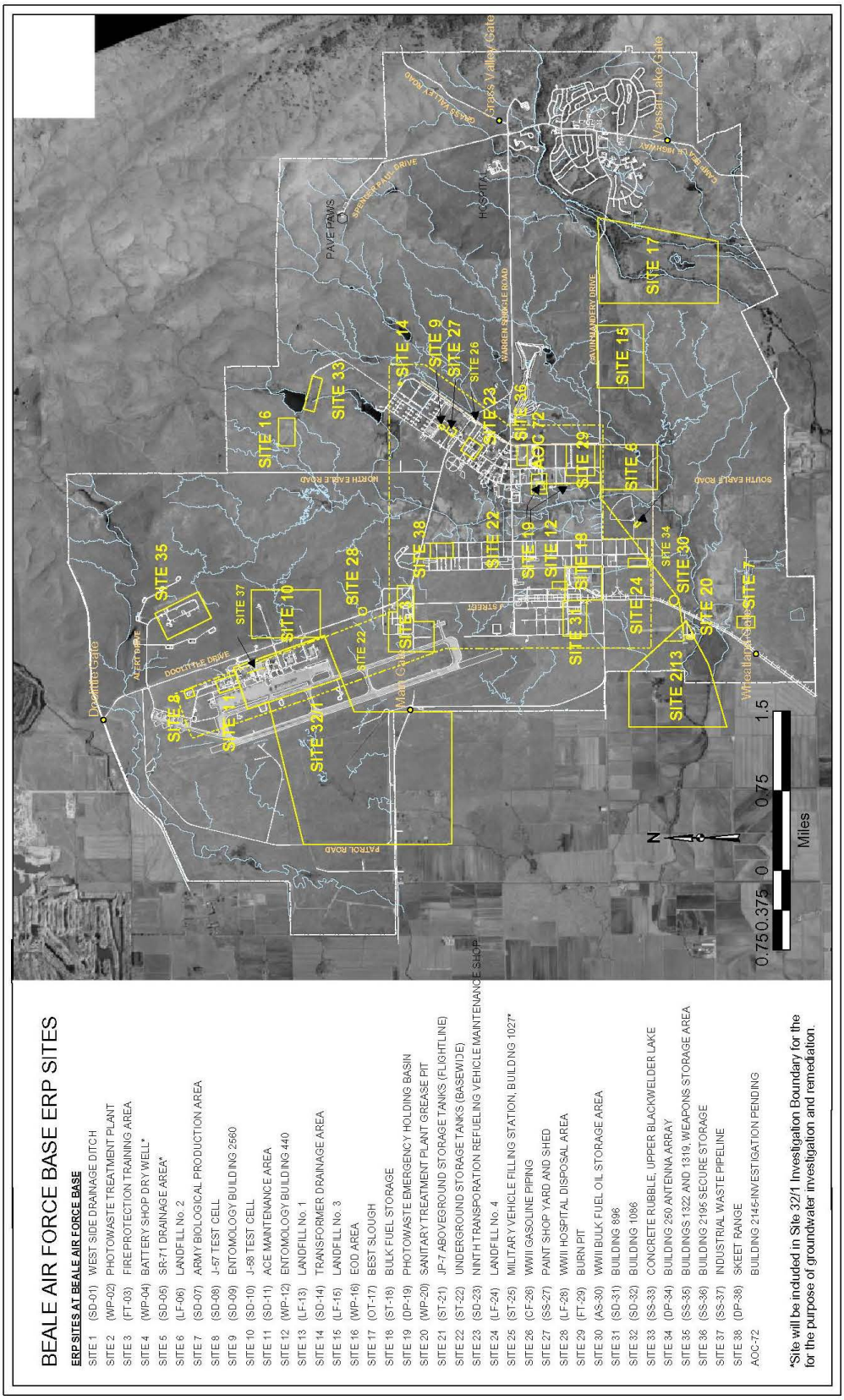


**Figure 3-2. Environmental Restoration Program Sites on Beale AFB**

- ***SD-23.*** This site is part of the base's RCRA Part B permit. This site was used for fuel tanker truck maintenance in the 1940s and 1950s. Facilities at the site included a maintenance shop and an oil/water separator. Cleanup and abatement of this site requires periodic sampling of soil and groundwater via the use of base monitoring wells. Contaminants at this site include fuel hydrocarbons.
- ***SD-32.*** This site was used for B-52 equipment maintenance and associated with the Titan Missile Program. Historic operations associated with Building 1086 included the use of USTs, wash racks, oil/water separator, degreasing room, and industrial waste line. This site is a suspected source of halogenated volatile organic compounds (VOCs). Cleanup and abatement of this site requires periodic sampling of soil and groundwater via base monitoring and soil vapor extraction wells.
- ***ST-18.*** This site is part of the base's RCRA Part B permit. This site is used for bulk fuel storage and has been in operation since 1958. Fuels stored at this facility include aviation gasoline, jet fuels (JP-4, JP-8, JP-TS, and formerly JP-7), diesel fuel, mogas, unleaded gasoline, and No. 2 fuel oil. Contaminants at this site include fuel hydrocarbons. Cleanup and abatement of this site requires periodic sampling soil and groundwater via the use of base monitoring wells, bioventing pilot system, and soil vapor extraction system.
- ***ST-22.*** This site consists of USTs currently or formerly located at Beale AFB. This site is part of the base's RCRA Part B permit. This site contained approximately 1,089 fuel oil and gasoline USTs ranging in size from 150 to 12,000 gallons. Contaminated soil was identified and removed from this site. Soil vapor extraction and bioventing systems were installed within this site for treatment of residual petroleum hydrocarbons in the soil. Currently, a total of 66 USTs remain open and are scheduled for removal.

## 3.5 Safety

A safe environment is one in which the potential for death, serious bodily injury or illness, or property damage is eliminated or reduced as much as possible. Human health and safety addresses workers' health and safety during demolition and construction activities, and public safety during demolition and construction activities and subsequent operations of those facilities.

All contractors performing construction activities at Beale AFB are responsible for following ground safety regulations and worker compensation programs and are required to conduct construction activities

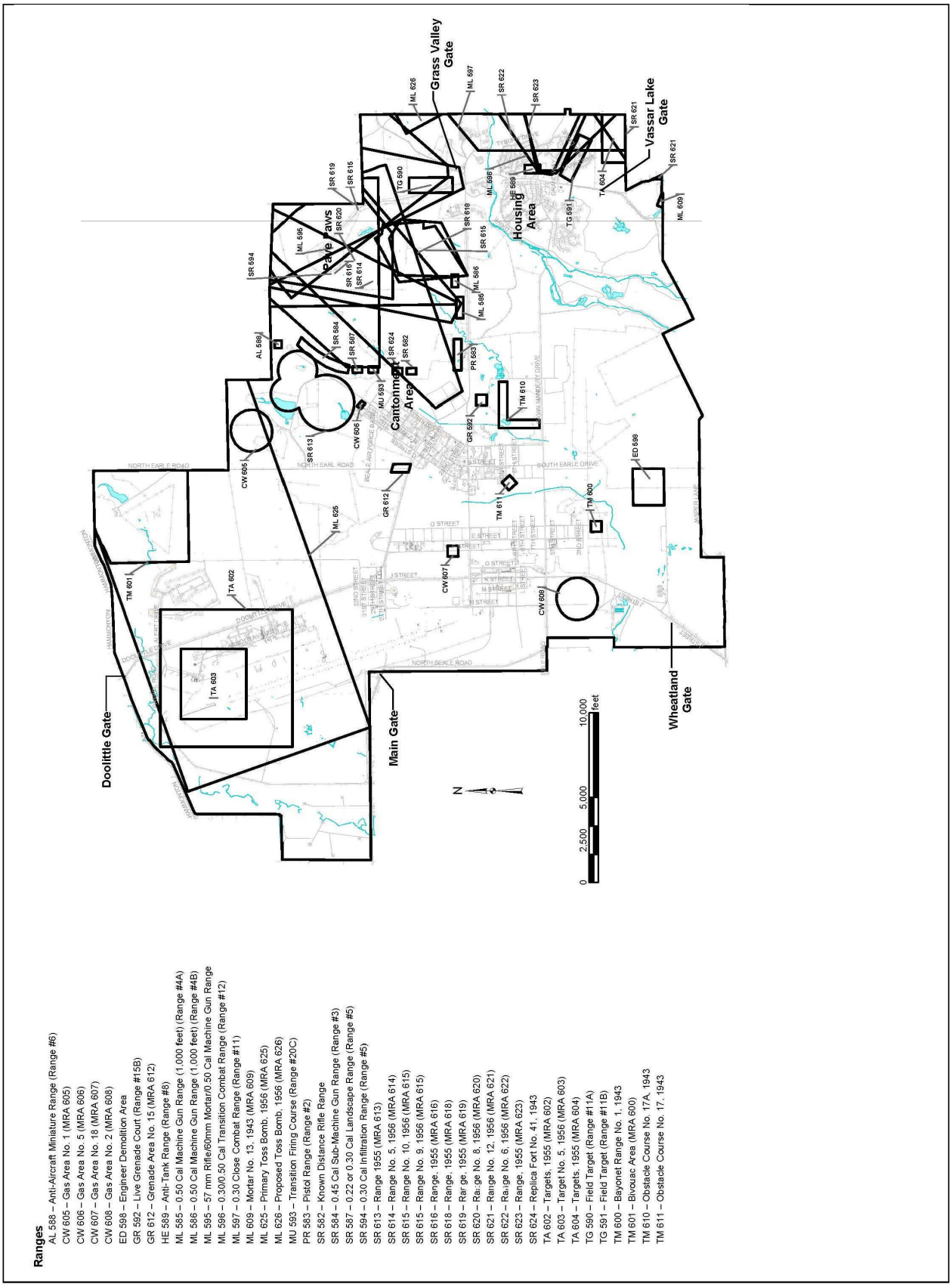


**Figure 3-3. Active and Historic Ranges on Beale AFB**

in a manner that does not pose any risk to workers or base personnel. An industrial hygiene program addresses exposure to hazardous materials, use of personal protective equipment, and availability of Material Safety Data Sheets. Industrial hygiene is a responsibility of contractors.

Beale AFB has several activities that require Explosive Quantity Distance (EQD) Safety Zones. These zones are established to minimize risk and exposure to individuals from explosives and explosive storage facilities. The General Plan shows numerous EQD Safety Zones on the northern and southern parts of the base (BAFB 2000).

The land encompassing Beale AFB was originally part of Camp Beale. Camp Beale was established in 1942 and consisted of approximately 62,000 acres in Yuba and Nevada Counties. Between 1942 and 1964, large portions of Camp Beale were leased, transferred, or sold to other parties. Between 1942 and 1964 the U.S. Army conducted various munitions tests throughout Camp Beale. Since 1964, the USAF has also conducted munitions tests on Beale AFB. In 2001, the USACE conducted an archives search report to determine the historic land uses, range locations, and types of munitions that might have been used on Camp Beale.

As part of this report it was discovered that Beale AFB has 44 range sites (see Figure 3-4). These range sites contain various munitions, unexploded ordnance (UXO), and Chemical Agent Identification Sets (CAIS). Most of the munitions, UXO, and CAIS on the surface of Camp Beale have been removed. However, munitions, UXO, and CAIS still can be found below the ground surface. Only the Demolish Building 5800 project is located within range sites. Although the other WINDO projects are not located within range sites, munitions, UXO, and CAIS may still be encountered within these project areas.

The need for munitions, UXO, and CAIS screening at potential UXO sites will be determined on a case by case basis. Any projects located within potential UXO sites would obtain an environmental restoration waiver from Headquarters (HQ) ACC/CEVR prior to commencement of construction activities. 9 CES/CEV staff would be contacted prior to commencement of construction activities to determine if an ERP waiver is required for the Proposed Action for all proposed work on or near range sites and for safety requirements that would need to be followed during construction.

## 3.6 Transportation

Regional access to Beale AFB is provided by State Route (SR) 65, SR 70, and SR 20. SR 65 is a north-south roadway extending from Interstate-80 in Roseville to SR 70 approximately 7 miles south of Marysville. Five main roads provide access to the base. North Beale Road extends from SR 70 in Linda

to the Main Gate and is the primary road connecting the installation and SR 70, Marysville, and Yuba City. Hammonton-Smartville Road is a two-lane rural roadway providing access from North Beale Road in Linda to SR 20 near Smartville. This roadway provides access to the base at the Doolittle Gate. Smartville Road is a two-lane rural roadway providing access from the Grass Valley Gate to Hammonton-Smartville Road south of SR 20. South Beale Road is a two-lane roadway providing access from SR 65 northwest of Wheatland to the Wheatland Gate. Spenceville Road is a two-lane rural roadway connecting SR 65 at the City of Wheatland to the Vassar Lake Gate.The road network on Beale AFB consists of arterials, collectors, and local streets. Arterials, those streets that carry the majority of the traffic, are

- Gavin Mandery Drive (Main Gate to Camp Beale Highway)
- Doolittle Drive (Doolittle Gate to Warren Shingle Road)
- Grass Valley Road/Warren Shingle Road (Grass Valley Gate to J Street)
- Camp Beale Highway (Vassar Lake Gate to Warren Shingle Road)
- J Street (Wheatland Gate to Doolittle Drive)

## 3.7 Water Resources

Water resources include surface water, groundwater, and floodplains. This evaluation identifies the quantity and quality of the resource and its demand for potable, irrigation, and industrial purposes. Surface water resources consist of lakes, rivers, and streams. Surface water is important for its contributions to the economic, ecological, recreational, and human health of a community or locale. Groundwater typically can be described in terms of its depth from the surface, aquifer or well capacity, water quality, surrounding geologic composition, and recharge rate. Floodplains are areas of low-level ground present along a river or stream channel. Federal, state, and local regulations often limit floodplain development to passive uses such as recreation and preservation activities to reduce the risks to human health and safety.

***Surface Water.*** Several lakes and small impoundments are located on Beale AFB, and 3 major drainage channels (Dry, Hutchinson, and Reeds Creeks) cross the base in a generally northeast-to-southwest direction. Dry, Reeds, and Hutchinson Creeks are not located within the project area; however, many drainages are located within or adjacent to the project areas (Figure 3-4).

***Groundwater.*** Yuba County is located over the north-central portion of the Central Valley groundwater basin, which is an extensive aquifer extending approximately 400 miles from Red Bluff to Bakersfield and averaging 40 miles wide. This aquifer is a complex system of different groundwater basins

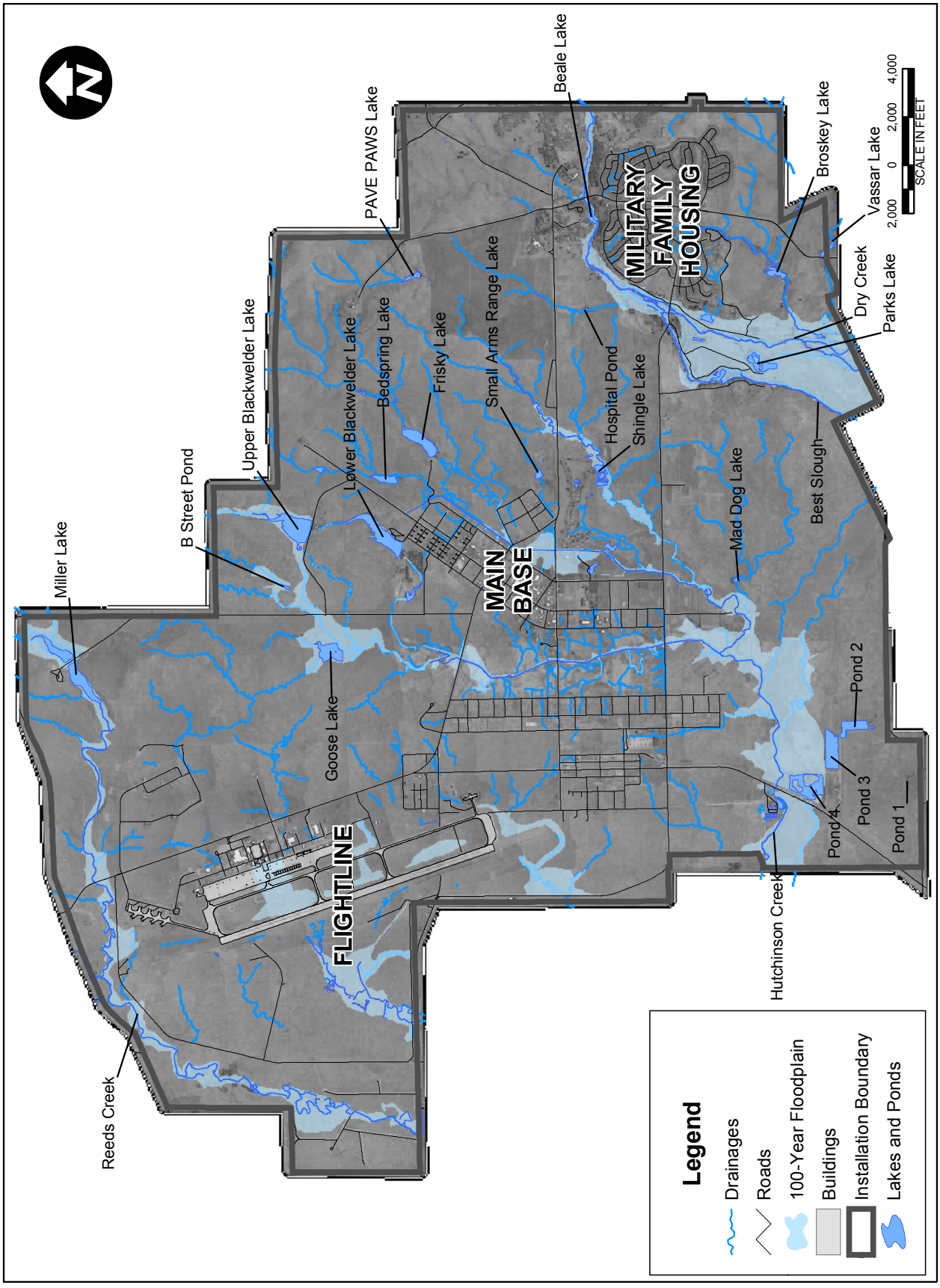


**Figure 3-4. Major Surface Waters and 100-Year Floodplain on Beale AFB**

composed of stratified sand, silt, and clay layers many thousands of feet thick. Groundwater at Beale AFB is found 300 to 500 feet below ground surface and is presumed to originate in unconfined aquifer materials with local clay/silt lenses overlying the aquifer. Groundwater in the northern portion of the base receives recharge from the Yuba River drainage basin and generally has the highest quality at the base, with low levels of total dissolved solids, nitrates, and sulfates; groundwater in the central portion of the base has higher levels of total dissolved solids; and groundwater at the south end of the base receives recharge from Dry Creek and the Bear River and has quality between that of the north and central regions.

Water for domestic use at Beale AFB is provided from 9 wells on the base that are 1 mile north of the main gate. Total water use at the base varies from 2.5 to 6.0 million gallons per day. The wells have a total combined pumping capacity of 5.0 million gallons per day. Water quality meets primary drinking standards, but not secondary water quality standards for iron and manganese, for which the only treatment is chlorination and fluoridation (BAFB 1999).

***Floodplains.*** No floodplains are located within the project areas. Therefore, floodplains will not be discussed further in the EA.

# 4. Environmental Consequences

This section of the EA assesses direct and indirect effects on the environment associated with the scope of the Proposed Action as described in Section 2.0 and in consideration of the potentially affected environment as characterized in Section 3.0. Direct effects are caused by the action and occur at the same time and place. Indirect effects are caused by the action and are later in time or farther removed in distance, but are still reasonably foreseeable.

## 4.1 Air Quality

The potential impacts on local and regional air quality conditions near a proposed federal action are determined based on the increases in regulated pollutant emissions relative to existing conditions and ambient air quality. Specifically, the impact in NAAQS attainment areas would be considered significant if the net increases in pollutant emissions from the Federal action resulted in one of the following scenarios:

- Cause or contribute to a violation of any national or state ambient air quality standard
- Expose sensitive receptors to substantially increased pollutant concentrations
- Represent an increase of 10 percent or more in an affected AQCR emissions inventory

Impacts on air quality in NAAQS nonattainment areas are considered significant if the net changes in project-related pollutant emissions result in one of the following scenarios:

- Cause or contribute to a violation of any national or state ambient air quality standard
- Increase the frequency or severity of a violation of any ambient air quality standard
- Exceed any significance criteria established in a SIP
- Delay the attainment of any standard or other milestone contained in the SIP

With respect to the General Conformity Rule, impacts on air quality would be considered significant if the proposed federal action would result in an increase of a nonattainment or maintenance area's emissions inventory by 10 percent or more for one or more nonattainment pollutants, or if such emissions exceed *de minimis* threshold levels established in 40 CFR 93.153(b) for individual nonattainment pollutants or for pollutants for which the area has been designated as a nonattainment or maintenance area.

Since a USEPA-designated nonattainment area would be affected by this Proposed Action, the USAF must comply with the federal General Conformity Rule (40 CFR Part 93). To do so, an analysis has been completed to ensure that, given the changes in direct and indirect emissions of the $O_3$ precursors (nitrogen oxides [$NO_x$] and VOCs), $PM_{10}$, and CO, the Proposed Action would be in conformity with applicable CAA requirements. The full Conformity Determination requirements specified in this rule can be avoided if the project-related nonattainment pollutant emissions rate increases are below *de minimis* threshold levels for each pollutant and are not considered regionally significant. For purposes of determining conformity in this nonattainment area, projected regulated pollutant emissions associated with the Proposed Action were estimated using available construction emissions and other nonpermitted emissions source information. The emissions calculations and *de minimis* threshold comparisons are collectively presented in the CAA General Conformity emissions calculations provided in Appendix B.

### 4.1.1 Proposed Action

***Impacts on Air Quality.*** Construction projects would generate total suspended particulate (TSP) and $PM_{10}$ emissions as fugitive dust from ground-disturbing activities (e.g., grading, demolition, soil piles) and combustion of fuels in construction equipment. Fugitive dust emissions would be greatest during the initial site preparation activities and would vary from day to day depending on the construction phase, level of activity, and prevailing weather conditions. The quantity of uncontrolled fugitive dust emissions from a construction site is proportional to the area of land being worked and the level of construction activity.

Construction operations would also result in emissions of criteria pollutants as combustion products from construction equipment as well as evaporative emissions from architectural coatings and asphalt paving operations. These emissions would be of a temporary nature. The emissions factors and estimates were generated based on guidance provided in *Air Quality Thresholds of Significance* from the Sacramento Metropolitan Air Quality Management District (SMAQMD 1994).

For purposes of this analysis, information presented in Section 2 was used to estimate fugitive dust and all other criteria pollutant emissions. The construction emissions presented in Table 4-1 include the estimated annual construction $PM_{10}$ emissions associated with the Proposed Action at Beale AFB. These emissions would produce slightly elevated short-term $PM_{10}$ ambient air concentrations. However, the direct effects would be temporary and would fall off rapidly with distance from the proposed construction site.

**Table 4-1. Annual Construction Emissions from the Proposed Action at Beale AFB, CA**

| Proposed Construction Emissions Estimates | | | | | |
|---|---|---|---|---|---|
| **CY** | **$NO_x$[1] (tpy)** | **VOC[1] (tpy)** | **CO (tpy)** | **$SO_2$ (tpy)** | **$PM_{10}$ (tpy)** |
| 2005 | 11.40 | 4.45 | 6.43 | 0.66 | 40.90 |
| 2006 | 3.03 | 6.96 | 6.02 | 0.35 | 5.05 |
| 2007 | 19.02 | 6.44 | 17.15 | 0.93 | 7.11 |

Note:
[1] Denotes nonattainment pollutant in FRAQMD of the USEPA Region 9 Sacramento Valley Intrastate AQCR.
CY - Calendar Year
$NO_x$ - Nitrogen Oxide(s)
VOC - Volatile Organic Compound
CO - Carbon Monoxide
$SO_2$ - Sulfur Dioxide
$PM_{10}$ - Particulate Matter ≤ 10 microns in diameter
tpy - tons per year

As mentioned earlier, FRAQMD is classified as being in *moderate* transitional nonattainment for $O_3$ and is in attainment for all other criteria pollutants. As shown in Table 4-1, the Proposed Action would generate emissions well below conformity *de minimis* limits as specified in 40 CFR 93.153 (note that even if all construction was to be conducted in one year, the total emissions would still be less than the *de minimis* limits). Because the emissions generated would be below *de minimis* levels, it is reasonable to assume that the temporary construction emissions caused by the Proposed Action would not cause a violation of the NAAQS and a full Conformity Determination would not be required. Therefore, no significant direct or indirect effects on regional or local air quality would result from implementation of the Proposed Action. Emissions factors, calculations, and estimates of construction-related emissions for the Proposed Action are detailed in Appendix B.

***Environmental Protection Measures.*** No environmental protection measures required.

### 4.1.2 No Action Alternative

Under the No Action Alternative, there would be no change in or effects on air quality at Beale AFB.

## 4.2 Biological Resources

Determination of the significance of potential impact on biological resources is based on the importance (i.e., legal, commercial, recreational, ecological, or scientific) of the resource; the percentage of the resource that would be affected relative to its occurrence in the region; the sensitivity of the resource to proposed activities; and the duration of ecological ramifications. Impacts on biological resources are

significant if species or habitats of high concern are adversely affected over relatively large areas, or if disturbances cause reductions in population size or impact the distribution of a species of high concern.

### 4.2.1 Proposed Action

During the design phase of the Proposed Action, extensive efforts were made by Beale AFB to avoid and minimize potential construction-related disturbances (direct or indirect) on sensitive habitats and associated special-status plant and wildlife species. Botanical and biological surveys of the project areas were conducted in an effort to determine the placement of project features in relation to natural features, to avoid undue impacts on biological resources.

***Impacts on Annual Grasslands.*** Implementation of the Proposed Action would result in a small loss of nonnative grassland habitat during construction. Due to the abundance of comparable grassland habitat in the surrounding area, the low loss of grassland habitat would not have an adverse impact on grasslands on Beale AFB.

***Environmental Protection Measures.*** The project areas should be surveyed prior to and during construction to avoid undue impacts to biological resources.

### 4.2.2 No Action Alternative

Under the No Action Alternative, there would be no change in or effects on biological resources at Beale AFB.

## 4.3 Geological Resources

Protection of unique geological features, minimization of soil erosion, and the siting of facilities in relation to potential geologic hazards are considered when evaluating environmental consequences of a proposed action on geological resources. Generally, impacts can be avoided or minimized if proper construction techniques, erosion control measures, and structural engineering design are incorporated into project development.

### 4.3.1 Proposed Action

***Impacts on Geological Resources.*** Under the Proposed Action, construction activities, such as grading, excavation, and recontouring of the soil, would result in direct effects on soil. Implementation of best management practices during construction would limit environmental consequences resulting from construction activities. Therefore, direct or indirect effects on soils, regional or local topography, or physiographic features at the base would not be significant from implementation of the Proposed Action.

***Environmental Protection Measures.*** Fugitive dust from construction activities should be minimized by watering and soil stockpiling, thereby reducing to negligible levels the total amount of soil exposed. Standard erosion control means (silt fencing, sediment traps, application of water sprays, and revegetation at disturbed areas) would also reduce environmental consequences related to those characteristics.

### 4.3.2 No Action Alternative

Under the No Action Alternative, there would be no change in or effects on geological resources at Beale AFB.

## 4.4 Hazardous Materials and Wastes Management

Environmental consequences associated with hazardous material and waste would be significant if the storage, use, transportation, or disposal of these substances were to substantially increase the risk to human health or exposure to the environment. Impacts from ACM and LBP would be considered significant if Occupational Safety and Health Administration (OSHA) standards were exceeded. Impacts on the ERP would be considered significant if the federal action disturbed (or created) contaminated sites resulting in adverse effects on human health or the environment.

### 4.4.1 Proposed Action

***Impacts on Hazardous Materials and Wastes.*** Construction activities associated with the Proposed Action would require the use of certain hazardous materials such as paints, welding gases, solvents, preservatives, and sealants. It is anticipated that the quantity of products containing hazardous materials used during the construction of the Proposed Action would be minimal and their use would be of short duration. The quantity of hazardous wastes generated from proposed construction activities would be negligible. Therefore, hazardous materials and wastes at Beale AFB would not be impacted by the proposed construction activities.

***Impacts on ACM and LBP.*** Any ACM or LBP encountered during demolition of buildings would be handled in accordance with established USAF policy and the Asbestos Management Plan or Lead-Based Paint Management Plan. It is anticipated that the structures associated with the commercial vehicle inspection facility project contain ACM and LBPs. USAF regulations prohibit the use of ACM and LBPs for new construction. Specifications for new facilities would be in accordance with USAF policies and regulations.

***Impacts on ERP.*** The Proposed Action is within or in close proximity to four ERP sites: SD-23, Ninth Transportation Refueling Vehicle Maintenance Shop; SD-32, Building 1086; ST-18, Bulk Fuel Storage Facility; and ST-22, USTs (Basewide) (ACC 2003).

The 940 SFS mobility storage facility project would be within ERP Site SD-23. This site is being treated and monitored for contaminants. Contaminants that may be encountered during construction include VOCs and fuel components.

The demolish MOGAS Storage Tanks 491 to 499 project is located in ERP Site ST-18. This site is being treated and monitored for contaminants. Contaminants that may be encountered during construction include VOCs and fuel components.

The 2-bay pre-flight hangar project is located in ERP Site SD-32. This site is being treated and monitored for contaminants. Contaminants that may be encountered during construction include VOCs and fuel components.

All projects except demolish Building 5800 are located in ERP Site ST-22. This site includes many UST sites, some of which are closed or will be prior to construction; and some which are undergoing treatment, monitoring, or investigation. Typical chemical hazards that may be encountered include fuels and fuel components in soils.

***Environmental Protection Measures.*** Because of the potential for construction workers to be exposed to contamination from ERP sites during construction, it is recommended that a health and safety plan be prepared by the contractor in accordance with OSHA requirements prior to commencement of construction activities on ERP sites. Should contamination be encountered, handling, storage, transportation, and disposal activities would be conducted in accordance with applicable federal, state, and local regulations; AFIs; and Beale AFB programs and procedures. Workers at the ERP sites listed above should either have OSHA 40-hour Hazardous Waste Operations and Emergency Response (HAZWOPER) training, or a supervisor should have OSHA Site Supervisor certification. Current site-specific information about contamination, UST sites, and ERP infrastructure on and around each project should be obtained prior to construction and site-specific health and safety plans are prepared. Project planning should include protection of ERP infrastructure such as monitoring wells, treatment systems, conveyance pipe to avoid disruption of clean up activities.

### 4.4.2 No Action Alternative

Under the No Action Alternative, there would be no change in or effects on hazardous materials and wastes at Beale AFB.

## 4.5 Safety

If implementation of the Proposed Action were to substantially increase risks associated with the safety of Beale AFB personnel, contractors, or the local community, or substantially hinder the ability to respond to an emergency, it would represent a significant impact. Impacts were assessed based on the potential effects of construction and demolition activities.

### 4.5.1 Proposed Action

***Impacts on Safety.*** Short-term, minor direct adverse effects would be expected from the Proposed Action. Implementation of the Proposed Action would slightly increase the short-term risk associated with construction contractors performing work at Beale AFB during the normal workday because the level of such activity would increase. Contractors would be required to establish and maintain safety programs. Projects associated with the Proposed Action would not pose a safety risk to base personnel or activities at the base. The proposed construction projects would enable 9 RW to meet future mission objectives at the base and conduct or meet mission requirements in a safe operating environment.

During construction activities associated with the Proposed Action, construction workers would have a medium possibility of encountering UXO or CAIS. The *Archives Search Report for Camp Beale Ordnance & Explosive Cleanup Project* (USACE 2001) contained only a partial listing of hazards at munitions response program range sites at Beale AFB. Preliminary assessments and site investigations have yet to be fully undertaken and the extent and character of contamination from UXO on Beale AFB is still being determined.

***Environmental Protection Measures.*** An ERP waiver approved by HQ ACC is required prior to accomplishing any work on or near a range. 9 CES/CEV staff should be contacted prior to commencement of construction activities to determine if an ERP waiver is required for the Proposed Action for all proposed work on or near range sites and for safety requirements that would need to be followed during construction.

### 4.5.2 No Action Alternative

Under the No Action Alternative, there would be no change in or effects on construction worker safety.

## 4.6 Transportation

Impacts to transportation are considered to be adverse if the Proposed Action or alternatives would result in a substantial increase in traffic on local roadways, which is defined as more than 50 trips per hour. Project trip generation is based on an estimate of the number of equipment and crew members that would be present during construction activities.

### 4.6.1 Proposed Action

***Impacts on Transportation.*** The construction and demolition phase of the Proposed Action would require delivery of materials to and removal of debris from construction sites. Construction traffic would comprise a small percentage of the total existing traffic and many of the vehicles would be driven to and kept onsite for the duration of construction and demolition, resulting in relatively few additional trips. Furthermore, potential increases in traffic volume associated with proposed construction activities would be temporary. Heavy vehicles are frequently on base roads. Therefore, the vehicles necessary for construction are not expected to have a heavy impact on base roads. All road and lane closures would be coordinated with the Security Forces and would be temporary in nature; therefore, no adverse direct or indirect effects on transportation systems would be expected.

***Environmental Protection Measures.*** No environmental protection measures are required.

### 4.6.2 No Action Alternative

Under the No Action Alternative, there would be no change in or effects on traffic at Beale AFB.

## 4.7 Water Resources

Evaluation criteria for water resources impacts are based on water availability, quality, and use; existence of floodplains; and associated regulations. A potential impact on water resources would be significant if it were to reduce water availability to existing users or interfere with the supply, create or contribute to overdraft of groundwater basins, exceed safe annual yield of water supply sources, adversely affect water quality or endanger public health by creating or worsening adverse health hazard conditions, threaten or damage unique hydrologic characteristics, or violate established laws or regulations that have been adopted to protect or manage water resources of an area. The impact of flood hazards on a proposed action is significant if such an action is proposed in an area with a high probability of flooding.

### 4.7.1 Proposed Action

***Impacts on Surface Waters.*** Implementation of the Proposed Action is expected to have no direct or indirect adverse effects on water quality. The Proposed Action would minimally increase the impervious surface area and runoff on the installation.

***Impacts on Groundwater.*** None of the activities associated with the Proposed Action would affect groundwater quality.

***Environmental Protection Measures.*** Adherence to best management practices and applicable codes and ordinances would reduce storm water runoff-related impacts to a level of insignificance. Erosion and sediment controls would be in place during construction to reduce and control siltation or erosion impacts on areas outside of the proposed construction sites.

### 4.7.2 No Action Alternative

Under the No Action Alternative, there would be no change in or effects on water resources at Beale AFB.

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# 5. Cumulative and Adverse Impacts

Cumulative impacts on environmental resources result from incremental effects of proposed actions, when combined with other past, present, and reasonably foreseeable future projects in the area. Cumulative impacts can result from individually minor, but collectively substantial, actions undertaken over a period of time by various agencies (federal, state, and local) or individuals. Informed decision making is served by consideration of cumulative impacts resulting from projects that are proposed, under construction, recently completed, or anticipated to be implemented in the reasonably foreseeable future.

During the timeframe of the Proposed Action, 9 RW may be constructing many of the projects listed in Appendix A. Table 5-1 summarizes potential cumulative effects on resources from the Proposed Action, when combined with other past, present, and future activities.

As seen in Table 5-1, no significant impacts on the environment would be anticipated from the Proposed Action in conjunction with these projects.

## 5.1 Unavoidable Adverse Impacts

Unavoidable adverse impacts would result from implementation of the Proposed Action. None of these impacts would be significant.

***Biological Resources.*** The Proposed Action would result in minimal loss of vegetation and wildlife habitat. Because implementation of the Proposed Action would result in temporary or very minor effects on other resources on Beale AFB, the Proposed Action would not contribute to a substantial cumulative effect on other biological resources.

***Energy.*** The use of nonrenewable resources is an unavoidable occurrence, although not considered significant. The Proposed Action would require the use of fossil fuels, a nonrenewable natural resource. Energy supplies, although relatively small, would be committed to the Proposed Action or No Action Alternative.

***Geological Resources.*** Under the Proposed Action, construction activities, such as grading, excavating, and recontouring of the soil, would result in soil disturbance. Implementation of best management practices during construction would limit environmental consequences resulting from construction activities. Standard erosion control means would also reduce environmental consequences related to these characteristics. Although unavoidable, effects on soils at the base are not considered significant.

## Table 5-1. Cumulative Effects on Resources

| Resource | Past Actions | Current Background Activities | Proposed Action | Known Future Actions | Cumulative Effects |
|---|---|---|---|---|---|
| **Air Quality** | Moderate transitional non-attainment area for $O_3$. | Emissions from aircraft, vehicles, and stationary equipment. | Potential dust generation during soil removal, site grading, and construction. | Potential dust generation during soil removal, site grading, and construction. | Continued moderate transitional non-attainment area for $O_3$. Actions would be *de minimus*. Effect not significant. |
| **Biological Resources** | Degraded historic habitat of sensitive and common wildlife species. | Beale AFB operations and development impact wildlife habitat. | Minor disturbance of vegetation by construction. | Minor disturbance of vegetation by construction. Direct and indirect effects on threatened and endangered species. | Permanent loss of vegetation and low quality habitat. Direct and indirect effects on threatened and endangered species. Effect not significant. |
| **Geological Resources** | Past Beale AFB development has modified soils. | Beale AFB development modifies soils. | Grading, excavating, and recontouring of the soil would result in further soil disturbance. | Grading, excavating, and recontouring of the soil would result in further soil disturbance. | Impacts would be permanent but localized. Effect not significant. |
| **Hazardous Materials and Wastes** | Mission operations created hazardous materials and wastes. Identification and recordation of ERP sites and Areas of Concern (AOCs). | Mission operations create hazardous materials and wastes. Identification and recordation of ERP sites and AOCs. | Construction activities would generate small amounts of hazardous materials and wastes. Construction activities would be located within ERP sites. | Construction activities would generate small amounts of hazardous materials and wastes. | Small temporary increase in generation of hazardous materials and waste. Effect not significant. |
| **Land Use** | Previous Beale AFB development has modified land use. | Development at Beale AFB has modified land use. | Construction activities would result in further land use changes. | Further development at Beale AFB would result in land use changes. | Effects are permanent, but localized to the construction areas. Effect is not significant. |
| **Safety** | Portions of the base have been used as active ranges. | Identification and recordation of historic and active ranges. | Short-term effects on construction workers from construction activities and potential UXO. | Short-term effects on construction workers from construction activities and potential UXO. | Short-term effects on construction workers from construction activities and potential UXO. Effect not significant. |
| **Transportation** | Traffic infrastructure has been constructed on the base. | Traffic infrastructure currently has been constructed and maintained on the base. | Short-term effects on traffic circulation and road closures from construction activities. | Short-term effects on traffic circulation and road closures from construction activities. | Short-term effects on traffic circulation and road closures from construction activities. Effect not significant. |
| **Water Resources** | Surface water quality moderately impacted by development. | Surface water quality moderately impacted by development. | Potential sedimentation from construction activities and minor increase in percentage of impervious surface area. | Potential sedimentation from construction activities and minor increase in percentage of impervious surface area. | Increased impervious area would have negligible effects on storm water discharges and water quality. Effect not significant. |

***Hazardous Materials and Wastes.*** The generation of hazardous materials and wastes are unavoidable conditions associated with the Proposed Action. However, the potential generation of hazardous materials and wastes would not significantly increase over baseline conditions and, therefore, are not considered significant.

***Land Use.*** The Proposed Action would result in converting 3.35 acres of open space to improved land use categories as well as disturb other areas already in improved lands. The construction and demolition projects are permanent and would impact only a minor amount of land on Beale AFB. While effects to land use are unavoidable with construction projects, the Proposed Action would not contribute to a substantial cumulative effect on land use resources.

## 5.2 Compatibility of the Proposed Action and Alternatives with the Objectives of Federal, Regional, State, and Local Land Use Plans, Policies, and Controls

Impacts on the ground surface as a result of the Proposed Action would occur entirely within the boundaries of Beale AFB. Construction activities would not result in any significant or incompatible land use changes on or off base. The proposed projects have been sited according to future land use zones. Consequently, construction activities would not be in conflict with future base land use policies or objectives. The Proposed Action would not conflict with any applicable off-base land use ordinances or designated clear zones.

## 5.3 Relationship Between Short-term Use and Long-term Productivity

Short-term uses of the biophysical components of man's environment include direct construction-related disturbances and direct impacts associated with an increase in population and activity that occurs over a period of less than 5 years. Long-term uses of man's environment include those impacts occurring over a period of more than 5 years, including permanent resource loss.

Several kinds of activities could result in short-term resource uses that compromise long-term productivity. Filling of wetlands or loss of other especially important habitats and consumptive use of high-quality water at nonrenewable rates are examples of actions that affect long-term productivity.

The Proposed Action would not result in an intensification of land use at Beale AFB and in the surrounding area. Development of the Proposed Action would not represent a significant loss of open space. Therefore, it is anticipated that the Proposed Action would not result in any cumulative land use or

aesthetic impacts. Long-term productivity of these sites would be increased by the development of the Proposed Action.

## 5.4 Irreversible and Irretrievable Commitments of Resources

The irreversible environmental changes that would result from implementation of the Proposed Action involve the consumption of material resources, energy resources, land, biological habitat, and human resources. The use of these resources is considered to be permanent.

Irreversible and irretrievable resource commitments are related to the use of nonrenewable resources and the effects that use of these resources will have on future generations. Irreversible effects primarily result from use or destruction of a specific resource that cannot be replaced within a reasonable time frame (e.g., energy and minerals).

***Material Resources.*** Material resources utilized for the Proposed Action include building materials (for construction of facilities), concrete and asphalt (for roads), and various material supplies (for infrastructure). Most of the materials that would be consumed are not in short supply, would not limit other unrelated construction activities, and would not be considered significant.

***Energy Resources.*** Energy resources utilized for the Proposed Action would be irretrievably lost. These include petroleum-based products (such as gasoline and diesel), natural gas, and electricity. During construction, gasoline and diesel would be used for the operation of construction vehicles. During operation, gasoline would be used for the operation of private and government-owned vehicles. Natural gas and electricity would be used by operational activities. Consumption of these energy resources would not place a significant demand on their availability in the region. Therefore, no significant effects would be expected.

***Biological Resources.*** The Proposed Action would result in a minimal loss of vegetation and wildlife habitat on proposed construction sites. However, proposed construction is mostly occurring on already disturbed land.

***Human Resources.*** The use of human resources for construction and operation is considered an irretrievable loss, only in that it would preclude such personnel from engaging in other work activities. However, the use of human resources for the Proposed Action represents employment opportunities and is considered beneficial.

# 6. List of Preparers

This EA has been prepared under the direction of Beale AFB. The individuals who contributed to the preparation of this document are listed below.

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# Appendix A
# WINDO Implementation Plan Project List

# FY 2004 WINDO Projects

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Table A-1 lists the projects programmed for implementation on Beale AFB in FY 2004.

**Table A-1. Projects Programmed for Fiscal Year 2004**

| Reference Number | Project Title | Action Category | Project Location | Funding Type | Approval Type/Title |
|---|---|---|---|---|---|
| 1 | Install Pop-Up Barriers, Vassar and Wheatland Gates [1] | Approved | Open Space | AT/FP | CATEX A2.3.12 EIAP #03.58 |
| 2 | Construct Flightline Water Mains [1] | Approved | Airfield | ENV | Flightline and J Street Renovations EA EIAP #02.11 |
| 3 | Repair Flightline Water Mains [1] | Approved | Airfield | ENV | Flightline and J Street Renovations EA EIAP #02.11 |
| 4 | GH Dormitory (96 rooms) [1] | Approved | Housing | MILCON | Global Hawk EA |
| 5 | Building 1200/GH Mission Area Study [1] | Approved | Aircraft O&M | MILCON | CATEX A2.3.24 EIAP #03.46 |
| 6 | Construct PSPTS Storage, RPRP OSS Office Space [1] | Approved | Aircraft O&M | SRMC | CATEX A.2.3.8 EIAP #03.96-98 |
| 7 | Repair Taxiway F Shoulders [1] | Approved | Airfield | SRMC | CATEX A2.3.10 EIAP #04.13 |
| 8 | Repair Parking for 940 CES/SVS CBT Facility [1] | Approved | Industrial | Tenants | CATEX A2.3.7 EIAP #04.15 |
| 9 | Construct JP8 Truck Receipt Area at Offloading Headers [1] | Approved | Industrial | DESC | CATEX A.2.10 EIAP #04.66 |
| 10 | SAM, Land Based Discharge System [1] | Approved | Water | ENV | CATEX A2.3.11 Ref EA from 1998 EIAP #04.25 |
| 11 | Upgrade Dock 3 [1] | Approved | Aircraft O&M | GH | CATEX A.2.3.7 EIAP #04.07 |
| 12 | Dog Kennel [1] | Approved | Multi-Use | GH | CATEX A2.3.11 Global Hawk EA EIAP #04.47 |
| 13 | Allied Support for LRE-DGPS [1] | Approved | Open Space | GH | CATEX A2.3.11 Flightline Fire Station EA EIAP #04.11 |
| 14 | All-weather surface on existing running track [1] | Approved | Outdoor Recreation Areas | QOL | CATEX A2.3.7 EIAP #04.30 |

| Reference Number | Project Title | Action Category | Project Location | Funding Type | Approval Type/Title |
|---|---|---|---|---|---|
| 15 | Construct Reclaimed Water Landscape Irrigation System in Main Base [1] | Approved | Industrial | ENV | CATEX A2.3.12 EIAP #04.79 |
| 16 | Repair Perimeter Fencing Grass Valley Gate [1] | Approved | Open Space | AT/FP | AT/FP Upgrades EA |
| 17 | Repair/Improve Main Gate [1] | Approved | Open Space | AT/FP | AT/FP Upgrades EA |
| 18 | Repair/Improve Wheatland Gate [1] | Approved | Open Space | AT/FP | AT/FP Upgrades EA |
| 19 | Repair Perimeter Fencing Doolittle Gate [1] | Approved | Open Space | AT/FP | AT/FP Upgrades EA |
| 20 | Repair Perimeter Fencing Wheatland Gate Phase 1 [1] | Approved | Open Space | AT/FP | AT/FP Upgrades EA |
| 21 | Repair Perimeter Fencing Wheatland Gate Phase 2 [1] | Approved | Open Space | AT/FP | AT/FP Upgrades EA |
| 22 | Repair Force Protection, PME Dorms [3] | Proposed | Community | AT/FP | CATEX A2.3.10 |
| 23 | Construct Force Protection, Contrails Dining Facility [3] | Proposed | Community | AT/FP | CATEX A2.3.10 |
| 24 | Construct Visitor Center Main Gate [5] | Proposed | Open Space | AT/FP | WINDO EA Vol 2 |
| 25 | Demolish MOGAS Storage Tanks 491-499 [4] | Proposed | Industrial | DESC | WINDO EA Vol 1 |
| 26 | Emergency Repair JPTS Filter Separators [3] | Proposed | Industrial | DESC | CATEX A2.3.10 |
| 27 | API 570 Inspection and Groundwater Testing on Bulk Storage UG [3] | Proposed | Industrial | DESC | CATEX A2.3.10 |
| 28 | Repair Bulk Storage Area JP8 PH [3] | Proposed | Industrial | DESC | CATEX A2.3.10/12 |
| 29 | 2 New Valves on JP8 Pipeline [3] | Proposed | Airfield | DESC | CATEX A2.3.10/12 |
| 30 | API 653 JPTS Storage Tank Inspection [3] | Proposed | Industrial | DESC | CATEX A2.3.10 |
| 31 | Upgrade JP-8 Hydrant Outlets and Pit Lids [5] | Proposed | Airfield and Open Space | DESC | WINDO EA Vol 2 |
| 32 | Repair Land Based Discharge, Phase 1 [6] | Concurrent | Water | ENV | This project will be evaluated under a separate EA EIAP #02.53 |

| Reference Number | Project Title | Action Category | Project Location | Funding Type | Approval Type/Title |
|---|---|---|---|---|---|
| 33 | Construct Land Based Discharged, Groundwater Monitoring Wells [3] | Proposed | Open Space | ENV | CATEX A2.3.26 |
| 34 | GH Parking Prep 1- JP-7 Pipeline Closure [3] | Proposed | Aircraft O&M | GH | CATEX A2.3.11 Global Hawk EA |
| 35 | GH Parking Prep 2 - Pavement Repair/Apron Tiedowns [3] | Proposed | Aircraft O&M | GH | CATEX A2.3.11 Global Hawk EA |
| 36 | Fitness Center Lobby [3] | Proposed | Community | QOL | CATEX A2.3.8 |
| 37 | Construct Running Path at O'Malley Field [4] | Proposed | Outdoor Recreation Areas | QOL | WINDO EA Vol 1 |
| 38 | Landscape Valley Chapel [3] | Proposed | Community | QOL | CATEX A2.3.10 |
| 39 | Construct LOX Storage Facility [4] | Proposed | Aircraft O&M and Industrial | O&M | WINDO EA Vol 1 |
| 40 | Repair Airfield Taxiways and Aprons [3] | Proposed | Airfield | GWOT | CATEX A2.3.10 EIAP #04.12 |
| 41 | Heritage Park [5] | Proposed | Open Space | QOL | WINDO EA Vol 2 |
| 42 | Global Hawk LRE Cables [5] | Proposed | Open Space | MILCON | WINDO EA Vol 2 EIAP #04.11 |

Source: 9 CES/CEC and 9 CES/CEV

Notes:

[1] Environmental approval for these projects was covered under previous environmental analysis; therefore, they will not be covered under this Environmental Assessment.

[2] Environmental analysis for these projects is currently ongoing; therefore, they will not be covered under this Environmental Assessment.

[3] This project qualifies for an Air Force categorical exclusion.

[4] This project is part of the Proposed Action and will be covered under this Environmental Assessment.

[5] This project involves wetland and/or floodplain issues and will be covered in WINDO EA, Volume 2.

[6] This project will be evaluated under a separate Environmental Assessment.

AAFES: Army & Air Force Exchange Service, AT/FP: Anti-Terrorism/Force Protection, CATEX: Categorical Exclusion, CBT: Computer Based Training, ENV: Environmental, O&M: Operations and Maintenance, FY: Fiscal Year, GH: Global Hawk, GWOT: Global War on Terrorism, LOX: Liquid Oxygen, MILCON: Military Construction, MOGAS: Motor Gasoline, QOL: Quality of Life, SRMC: Sustainment, Restoration, and Modernization for Contract, WINDO: Wing Infrastructure Development Outlook

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# FY 2005 WINDO Projects

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Table A-2 lists the projects programmed for implementation on Beale AFB in FY 2005.

**Table A-2. Projects Programmed for Fiscal Year 2005**

| Reference Number | Project Title | Action Category | Project Location | Funding Type | Approval Type/Title |
|---|---|---|---|---|---|
| 43 | Add/Alter Plaza at Youth Center, Building 3340 [1] | Approved | Community | AT/FP | CATEX A2.3.11 Youth Center EA |
| 44 | Repair J Street Water Mains, Phase 1 [1] | Approved | Multiple Land Uses | ENV | Flightline and J Street Renovations EA EIAP #02.18 |
| 45 | Storm Water Soils Holding Area [1] | Approved | Open Space | ENV | CATEX A2.3.7 |
| 46 | Add/Alter Bldg 1225 for Global Hawk Aerospace Ground Equipment [1] | Approved | Aircraft O&M | MILCON | CATEX A2.3.11 Global Hawk EA EIAP #02.41 |
| 47 | Upgrade Dock 2, Building 1075 [1] | Approved | Aircraft O&M | GH | CATEX A2.3.8 EIAP #04.08 |
| 48 | Construct Flightline Centralized Parking South [4] | Proposed | Open Space | AT/FP | WINDO EA Vol 2 |
| 49 | Construct Force Protection, 9 SFS [2] | Proposed | Industrial | AT/FP | CATEX A2.3.10 |
| 50 | Repair Force Protection, 9 CES DCC, Building 2539 [2] | Proposed | Industrial | AT/FP | CATEX A2.3.10 |
| 51 | Repair Dikes, 3 JP-8 Tanks [2] | Proposed | Industrial | DESC | CATEX A2.3.10/12 |
| 52 | Clean and Internally Coat JP-8 Pipeline [2] | Proposed | Industrial | DESC | CATEX A2.3.10 |
| 53 | Annual UST and Pipelines Tracer Integrity Testing [2] | Proposed | Industrial | DESC | CATEX A2.3.10 |
| 54 | Repair A St. Gas Station, Building 2499 [2] | Proposed | Community | DESC | CATEX A2.3.10 |
| 55 | Reroute Storm Water Bulk Fuels [2] | Proposed | Industrial | ENV | CATEX A2.3.10 EIAP #03.03 |
| 56 | Erosion Control at Miller Lake [4] | Proposed | Water | ENV | WINDO EA Vol 2 |
| 57 | Repair Lower Blackwelder Dam [2] | Proposed | Water | ENV | CATEX A2.3.11 WINDO EA Vol 2 |
| 58 | Erosion Control at Upper Blackwelder Lake [4] | Proposed | Open Space | ENV | WINDO EA Vol 2 |
| 59 | Fabrication Shop [2] | Proposed | Industrial | GH | CATEX A2.3.11 Global Hawk EA |

| Reference Number | Project Title | Action Category | Project Location | Funding Type | Approval Type/Title |
|---|---|---|---|---|---|
| 60 | Add/Alter Weapons Vault in Building 1023 [2] | Proposed | Aircraft O&M | GH | CATEX A2.3.8 |
| 61 | Construct Joint 940 CES/SVS CBT Facility [2] | Proposed | Industrial | O&M | CATEX A2.3.11 |
| 62 | Construct 940 ARW AGS SQ Maintenance and Administration Facility [3] | Proposed | Industrial | O&M | WINDO EA Vol 1 |
| 63 | Construct 940 Security Force Squadron Mobility Equipment Storage Facility [3] | Proposed | Open Space | O&M | WINDO EA Vol 1 EIAP #03.30 |
| 64 | Construct Shopette Gas Service Station and Car Wash [3] | Proposed | Open Space | AAFES | WINDO EA Vol 1 |
| 65 | Construct 940 CES Entry Awning 940 CES Facility [2] | Proposed | Industrial | Tenants | CATEX A2.3.8 |
| 66 | P2 Rock Crusher [4] | Proposed | Open Space | ENV | WINDO EA Vol. 2 |
| 67 | Construct Gas Service Station, Auto Hobby Shop, and Car Wash [4] | Proposed | Open Space | AAFES | WINDO EA Vol 2 |

Source: 9 CES/CEC and 9 CES/CEV

Notes:

[1] Environmental approval for these projects was covered under previous environmental analysis; therefore, they will not be covered under this Environmental Assessment.

[2] This project qualifies for an Air Force categorical exclusion.

[3] This project is part of the Proposed Action and will be covered under this Environmental Assessment.

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AAFES: Army & Air Force Exchange Service, AT/FP: Anti-Terrorism/Force Protection, CATEX: Categorical Exclusion, CBT: Computer Based Training, ENV: Environmental, O&M: Operations and Maintenance, FY: Fiscal Year, GH: Global Hawk, GWOT: Global War on Terrorism, LOX: Liquid Oxygen, MILCON: Military Construction, MOGAS: Motor Gasoline, QOL: Quality of Life, SRMC: Sustainment, Restoration, and Modernization for Contract, WINDO: Wing Infrastructure Development Outlook

# FY 2006 WINDO Projects

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Table A-3 lists the projects programmed for implementation on Beale AFB in FY 2006.

**Table A-3. Projects Programmed for Fiscal Year 2006**

| Reference Number | Project Title | Action Category | Project Location | Funding Type | Approval Type/Title |
|---|---|---|---|---|---|
| 68 | Repair Water Mains J Street, Phase II [1] | Approved | Multiple Land Uses | ENV | Flightline and J Street Renovations EA |
| 69 | Child Development Center [1] | Approved | Industrial | MILCON | Global Hawk EA |
| 70 | Construct POL Office Building, Bulk Fuels Storage Area [3] | Proposed | Industrial | GWOT | CATEX A2.3.10 |
| 71 | Maintain Vassar Lake Gate House, Bldg. 3296 [2] | Concurrent | Open Space | AT/FP | AT/FP Upgrades EA |
| 72 | Repair Force Protection Air Traffic Control Tower [3] | Proposed | Aircraft O&M | AT/FP | CATEX A2.3.8 |
| 73 | Repair Force Protection at AFCOMAC School [3] | Proposed | Administrative | AT/FP | CATEX A2.3.10 |
| 74 | Install Duress Alarms WG/CC & WG/CV Quarters [3] | Proposed | Housing | AT/FP | CATEX A2.3.8 |
| 75 | Repair Force Protection at Drinking Water Treatment Plant [3] | Proposed | Open Space | AT/FP | CATEX A2.3.10 |
| 76 | Construct Force Protection, Flightline Elevated $H_2O$ Storage Tank [3] | Proposed | Open Space | AT/FP | CATEX A2.311 |
| 77 | Repair Force Protection, Recce Point Club [5] | Proposed | Community | AT/FP | WINDO EA Vol 2 |
| 78 | Construct Force Protection at Valley Chapel, Phase 2 [3] | Proposed | Community | AT/FP | CATEX A2.3.10 |
| 79 | Construct Dumpster Blast Mitigation, Main Base [3] | Proposed | Multiple Land Uses | AT/FP | CATEX A2.3.10 |
| 80 | Construct Dumpster Blast Mitigation, Flightline [3] | Proposed | Aircraft O&M | AT/FP | CATEX A2.3.10 |

| Reference Number | Project Title | Action Category | Project Location | Funding Type | Approval Type/Title |
|---|---|---|---|---|---|
| 81 | Demolish NAVAID Shop, Building 502 [3] | Proposed | Industrial | O&M | CATEX A2.3.10 |
| 82 | Demolish NCO Club, Building 5800 [4] | Proposed | Community | O&M | WINDO EA Vol 1 |
| 83 | Slurry JP-7 Test Cell Piping & JP4 Piping at Control Tower [3] | Proposed | Airfield | DESC | CATEX A2.3.12 |
| 84 | Demolish/Replace Security Lighting POL [3] | Proposed | Industrial | DESC | CATEX A2.3.12 |
| 85 | Washracks Storm Water Improvement [3] | Proposed | Various | ENV | CATEX A2.3.8 |
| 86 | Construct 2 Bay Pre-flight Hangar [4] | Proposed | Aircraft O&M | MILCON | WINDO EA Vol 1 |
| 87 | Construct 940 ARW Consolidated Storage Facility [4] | Proposed | Open Space | O&M | WINDO EA Vol 1 |

Source: 9 CES/CEC and 9 CES/CEV

Notes:

[1] Environmental approval for these projects was covered under previous environmental analysis; therefore, they will not be covered under this Environmental Assessment.

[2] Environmental analysis for these projects is currently ongoing; therefore, they will not be covered under this Environmental Assessment.

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AAFES: Army & Air Force Exchange Service, AT/FP: Anti-Terrorism/Force Protection, CATEX: Categorical Exclusion, CBT: Computer Based Training, ENV: Environmental, O&M: Operations and Maintenance, FY: Fiscal Year, GH: Global Hawk, GWOT: Global War on Terrorism, LOX: Liquid Oxygen, MILCON: Military Construction, MOGAS: Motor Gasoline, QOL: Quality of Life, SRMC: Sustainment, Restoration, and Modernization for Contract, WINDO: Wing Infrastructure Development Outlook

# Appendix B
# Clean Air Act General Conformity Analysis Emissions Calculations

**Emissions Estimates for EA of WINDO Implementation Plan Projects at Beale AFB, CA**

**This workbook contains**

| | |
|---|---|
| **Summary** | (this worksheet) Summarizes total emissions by calendar year. |
| **Combustion** | (one sheet for each calendar year) Estimates emissions from non-road equipment exhaust as well as painting. |
| **Grading** | (one sheet for each calendar year) Estimates the number of days of site preparation, to be used for estimating heavy equipment exhaust and earthmoving dust emissions) |
| **Fugitive** | (one sheet for each calendar year) Estimates fine particulate emissions from earthmoving, vehicle traffic, and windblown dust. |

**Summary of Construction Emissions**

| | | NOx (ton) | VOC (ton) | CO (ton) | SO2 (ton) | PM10 (ton) |
|---|---|---|---|---|---|---|
| **CY2005** | Combustion | 11.40 | 4.45 | 6.43 | 0.66 | 1.43 |
| | Fugitive Dust | | | | | 39.47 |
| | TOTAL CY2005 | 11.40 | 4.45 | 6.43 | 0.66 | 40.90 |

| | | NOx (ton) | VOC (ton) | CO (ton) | SO2 (ton) | PM10 (ton) |
|---|---|---|---|---|---|---|
| **CY2006** | Combustion | 3.03 | 6.96 | 6.02 | 0.35 | 0.58 |
| | Fugitive Dust | | | | | 4.47 |
| | TOTAL CY2006 | 3.03 | 6.96 | 6.02 | 0.35 | 5.05 |

| | | NOx (ton) | VOC (ton) | CO (ton) | SO2 (ton) | PM10 (ton) |
|---|---|---|---|---|---|---|
| **CY2007** | Combustion | 19.02 | 6.44 | 17.15 | 0.93 | 1.48 |
| | Fugitive Dust | | | | | 5.63 |
| | TOTAL CY2007 | 19.02 | 6.44 | 17.15 | 0.93 | 7.11 |

**General Conformity Regional Significance Thresholds (10% of regional budget)**

Since future year budgets were not readily available, actual 1999 air emissions inventories for the counties were used as an approximation of the regional inventory. Because the Proposed Action is several orders of magnitude below significance, the conclusion would be the same, regardless of whether future year budget data set were used.

**Sacramento Valley Intrastate AQCR**

| | Point and Area Sources Combined | | | | |
|---|---|---|---|---|---|
| Year | NOx (tpy) | VOC (tpy) | CO (tpy) | SO2 (tpy) | PM10 (tpy) |
| 1999 | 126,335 | 128,779 | 904,756 | 110,191 | 11,507 |

Source: USEPA-AirData NET Tier Report (http://www.epa.gov/air/data/nettier.html). Site visited on 2/20/04

**Determination Significance (Significance Threshold = 10%)**

| | Point and Area Sources Combined | | | | |
|---|---|---|---|---|---|
| | NOx (tpy) | VOC (tpy) | CO (tpy) | SO2 (tpy) | PM10 (tpy) |
| Minimum -1999 | 126,335 | 128,779 | 904,756 | 110,191 | 11,507 |
| 2005 Emissions | 11.40 | 4.45 | 6.43 | 0.66 | 40.90 |
| Proposed Action % | **0.0090%** | **0.0035%** | **0.0007%** | **0.0006%** | **0.3555%** |

**Determination Significance (Significance Threshold = 10%)**

| | Point and Area Sources Combined | | | | |
|---|---|---|---|---|---|
| | NOx (tpy) | VOC (tpy) | CO (tpy) | SO2 (tpy) | PM10 (tpy) |
| Minimum -1999 | 126,335 | 128,779 | 904,756 | 110,191 | 11,507 |
| 2006 Emissions | 3.03 | 6.96 | 6.02 | 0.35 | 5.05 |
| Proposed Action % | **0.0024%** | **0.0054%** | **0.0007%** | **0.0003%** | **0.0439%** |

**Determination Significance (Significance Threshold = 10%)**

| | Point and Area Sources Combined | | | | |
|---|---|---|---|---|---|
| | NOx (tpy) | VOC (tpy) | CO (tpy) | SO2 (tpy) | PM10 (tpy) |
| Minimum -1999 | 126,335 | 128,779 | 904,756 | 110,191 | 11,507 |
| 2007 Emissions | 19.02 | 6.44 | 17.15 | 0.93 | 7.11 |
| Proposed Action % | **0.0151%** | **0.0050%** | **0.0019%** | **0.0008%** | **0.0618%** |

**WINDO Implementation Plan Projects at Beale AFB, CA**

**Construction Combustion Emissions**

Includes:

| | | | | |
|---|---|---|---|---|
| 1 | 100% of Construct LOX Storage Facility | 10,365 | ft2 | 0.24 acres |
| 2 | 100% of Construct Running Path at O'Malley Field | 1,363,055 | ft2 | 31.29 acres |
| 3 | 100% of Demolish MOGAS Storage Tanks, 491-499 | 17,122 | ft2 | 0.39 acres |

Note: The above projects are FY04 funded projects. It is assumed that these projects will be completed sometime in CY05.

**Construction Site Air Emissions**

Combustion Emissions of ROG, NOx, SO2, CO and PM10 Due to Construction

**User Inputs:**

| | | | |
|---|---|---|---|
| Total Building Area: | 27,487 | $ft^2$ | (1 and 3) |
| Total Paved Area: | 1,363,055 | $ft^2$ | (2) |
| Total Disturbed Area: | 31.92 | acres | (1-3) |
| Construction Duration: | 1.0 | years | (assumed) |
| Annual Construction Activity: | 230 | days/yr | (assumed) |

## Results:[Average per Year Over the Construction Period]

| | VOC | NOx | SO2 | CO | PM10 |
|---|---|---|---|---|---|
| Emissions, lbs/day | 38.71 | 99.10 | 5.70 | 55.88 | 12.46 |
| Emissions, tons/yr | 4.45 | 11.40 | 0.66 | 6.43 | 1.43 |

## Calculation of Unmitigated Emissions

Summary of Input Parameters

| | VOC | NOx | SO2 | CO | PM10 |
|---|---|---|---|---|---|
| Total new acres disturbed: | 31.92 | 31.92 | 31.92 | 31.92 | 31.92 |
| Total new acres paved: | 31.29 | 31.29 | 31.29 | 31.29 | 31.29 |
| Total new building space, $ft^2$: | 27,487 | 27,487 | 27,487 | 27,487 | 27,487 |
| Total years: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Area graded, acres in 1 yr: | 31.92 | 31.92 | 31.92 | 31.92 | 31.92 |
| Area paved, acres in 1 yr: | 31.29 | 31.29 | 31.29 | 31.29 | 31.29 |
| Building space, $ft^2$ in 1 yr: | 27,487 | 27,487 | 27,487 | 27,487 | 27,487 |

**Annual Emissions by Source (lbs/day)**

| | VOC | NOx | SO2 | CO | PM10 |
|---|---|---|---|---|---|
| Grading Equipment | 8.0 | 51.1 | 3.4 | 11.1 | 8.9 |
| Asphalt Paving | 8.2 | 0.0 | 0.0 | 0.0 | 0.0 |
| Stationary Equipment | 4.6 | 3.8 | 0.3 | 0.8 | 0.2 |
| Mobile Equipment | 4.4 | 44.3 | 2.1 | 44.0 | 3.3 |
| Architectural Coatings (Non-Res) | 13.5 | 0.0 | 0.0 | 0.0 | 0.0 |
| **Total Emissions (lbs/day):** | **38.7** | **99.1** | **5.7** | **55.9** | **12.5** |

Emission Factors

Reference: Air Quality Thresholds of Significance, SMAQMD, 1994.

| | SMAQMD Emission Factor | | | | |
|---|---|---|---|---|---|
| Source | VOC | NOx | SO2 * | CO * | PM10 |
| Grading Equipment | 2.50E-01 lbs/acre/day | 1.60E+00 lbs/acre/day | 0.11 lbs/acre/day | 0.35 lbs/acre/day | 2.80E-01 lbs/acre/day |
| Asphalt Paving | 2.62E-01 lbs/acre/day | NA | NA | NA | NA |
| Stationary Equipment | 1.68E-04 lbs/day/$ft^2$ | 1.37E-04 lbs/day/$ft^2$ | 9.11E-06 lbs/day/$ft^2$ | 2.97E-05 lbs/day/$ft^2$ | 8.00E-06 lbs/day/$ft^2$ |
| Mobile Equipment | 1.60E-04 lbs/day/$ft^2$ | 1.61E-03 lbs/day/$ft^2$ | 7.48E-05 lbs/day/$ft^2$ | 0.0016 lbs/day/$ft^2$ | 1.20E-04 lbs/day/$ft^2$ |
| Architectural Coatings (Non-Res) | 8.15E-02 lbs/day/ft | NA | NA | NA | NA |

* Factors for grading equipment and stationary equipment are calculated from AP-42 for diesel engines using ratios with the NOx factors. Factors for mobile equipment are calculated from ratios with Mobile5a 2001 NOx emission factors for heavy duty trucks for each site.

**WINDO Implementation Plan Projects at Beale AFB, CA**

**Construction Fugitive Dust Emissions**

Calculation of PM10 Emissions Due to Site Preparation (Uncontrolled).

User Input Parameters / Assumptions

| | | | |
|---|---|---|---|
| Acres graded per year: | 31.92 | acres/yr | (From "Combustion" worksheet) |
| Grading days/yr: | 27.34 | days/yr | (From "Grading" worksheet) |
| Exposed days/yr: | 90 | assumed days/yr graded area is exposed | |
| Grading Hours/day: | 8 | hr/day | |
| Soil piles area fraction: | 0.10 | (assumed fraction of site area covered by soil piles) | |
| Soil percent silt, s: | 8.5 | % | (mean silt content; expected range: 0.5 to 23, AP-42 Table 13.2.2-1) |
| Soil percent moisture, M: | 50 | % | (NOAA 2003 http://www.cpc.noaa.gov/products/soilmst/drought_composite.html#CSMRP) |
| Annual rainfall days, p: | 60 | days/yr | rainfall exceeds 0.01 inch/day (AP-42 Fig 13.2.2-1) |
| Wind speed > 12 mph %, I: | 21.5 | % | Ave. wind speed at Yuba City, CA (http://www.epa.gov/ttn/naaqs/ozone/areas/wind.htm) |
| Fraction of TSP, J: | 0.5 | (SCAQMD recommendation) | |
| Mean vehicle speed, S: | 5 | mi/hr | (On-site) |
| Dozer path width: | 8 | ft | |
| Qty construction vehicles: | 3.83 | vehicles | (From "Grading" worksheet) |
| On-site VMT/vehicle/day: | 5 | mi/veh/day | (Excluding bulldozer VMT during grading) |
| PM10 Adjustment Factor k | 2.6 | lb/VMT | (AP-42 Table 13.2.2-2 9/98 for PM10) |
| PM10 Adjustment Factor a | 0.8 | (dimensionless) | (AP-42 Table 13.2.2-2 9/98 for PM10) |
| PM10 Adjustment Factor b | 0.4 | (dimensionless) | (AP-42 Table 13.2.2-2 9/98 for PM10) |
| PM10 Adjustment Factor c | 0.3 | (dimensionless) | (AP-42 Table 13.2.2-2 9/98 for PM10) |
| Mean Vehicle Weight W | 40 | tons | assumed for aggregate trucks |

**Emissions Due to Soil Disturbance Activities**

Operation Parameters (Calculated from User Inputs)

| | | | |
|---|---|---|---|
| Grading duration per acre | 6.9 | hr/acre | |
| Bulldozer mileage per acre | 1 | VMT/acre | (Miles traveled by bulldozer during grading) |
| Construction VMT per day | 19 | VMT/day | |
| Construction VMT per acre | 16.4 | VMT/acre | (Travel on unpaved surfaces within site) |

Equations Used (Corrected for PM10)

| Operation | Empirical Equation | Units | AP-42 Section (5th Edition) |
|---|---|---|---|
| Bulldozing | $0.75(s^{1.5})/(M^{1.4})$ | lbs/hr | Table 11.9-18.24, Overburden |
| Grading | $(0.60)(0.051)s^{2.0}$ | lbs/VMT | Table 11.9-18.24 |
| Vehicle Traffic | $[k(s/12)^{a} (W/3)^{b}/(M/0.2)^{c}] [(365-P)/365]$ | lbs/VMT | Section 13.2.2 |

Source: Compilation of Air Pollutant Emission Factors, Vol. I, USEPA AP-42, Section 11.9 dated 7/98 and Section 13.2 dated 9/98

Calculation of PM10 Emission Factors for Each Operation

| Operation | Emission Factor (mass/ unit) | Operation Parameter | Emission Factor (lbs/ acre) |
|---|---|---|---|
| Bulldozing | 0.08 lbs/hr | 6.9 hr/acre | 0.6 lbs/acre |
| Grading | 0.77 lbs/VMT | 1 VMT/acre | 0.8 lbs/acre |
| Vehicle Traffic | 0.89 lbs/VMT | 16.4 VMT/acre | 14.5 lbs/acre |

**Emissions Due to Wind Erosion of Soil Piles and Exposed Graded Surface**

Reference: Air Quality Thresholds of Significance, SCAQMD, 1994.

Soil Piles EF = 1.7(s/1.5)[(365 - H)/235](I/15)(J) = (s)(365 - H)(I)(J)/(3110.2941), p. A9-99.

Soil Piles EF = 9 lbs/day/acre covered by soil piles

Consider soil piles area fraction so that EF applies to graded area

Soil piles area fraction: 0.10 (Fraction of site area covered by soil piles)
Soil Piles EF = 0.9 lbs/day/acres graded

Graded Surface EF = 26.4 lbs/day/acre (recommended in CEQA Manual, p. A9-93).

**Calculation of Annual PM10 Emissions**

| Source | Emission Factor | Graded Acres/yr | Exposed days/yr | Emissions lbs/yr | Emissions tons/yr |
|---|---|---|---|---|---|
| Bulldozing | 0.6 lbs/acre | 31.92 | NA | 19 | 0.01 |
| Grading | 0.8 lbs/acre | 31.92 | NA | 26 | 0.01 |
| Vehicle Traffic | 14.5 lbs/acre | 31.92 | NA | 463 | 0.23 |
| Erosion of Soil Piles | 0.9 lbs/acre/day | 31.92 | 90 | 2,586 | 1.29 |
| Erosion of Graded Surface | 26.4 lbs/acre/day | 31.92 | 90 | 75,848 | 37.92 |
| TOTAL | | | | 78,941 | 39.47 |

Soil Disturbance EF: 15.9 lbs/acre
Wind Erosion EF: 27.3 lbs/acre/day

Back calculate to get EF: 90.5 lbs/acre/grading day

**WINDO Implementation Plan Projects at Beale AFB, CA**

**Construction (Grading) Schedule**

Estimate of time required to grade a specified area.

Input Parameters
Construction area 31.92 acres/yr (from "Combustion" Worksheet)
Qty Equipment: 3.83 (calculated based on acres disturbed, assuming that up to three machines can effectively work on a 25 acre area, with a minimum of three machines for any job, regardless of area graded)

Assumptions.
Terrain is mostly flat.
An average of 6" soil is excavated from one half of the site and backfilled to the other half of the site; no soil is hauled off-site or borrowed.
200 hp bulldozers are used for site clearing.
300 hp bulldozers are used for stripping, excavation, and backfill.
Vibratory drum rollers are used for compacting.
Stripping, Excavation, Backfill and Compaction require an average of two passes each.
Excavation and Backfill are assumed to involve only half of the site.

Calculation of days required for one piece of equipment to grade the specified area.

Reference: Means Heavy Construction Cost Data, 6th Ed., R. S. Means, 1992.

| Means Line No. | Operation | Description | Output | Units | Acres per equip-day) | equip-days per acre | Acres/yr | Equip-days per year |
|---|---|---|---|---|---|---|---|---|
| 021 108 0550 | Site Clearing | Dozer & rake, medium brush | 0.6 | acre/day | 0.6 | 1.67 | 31.92 | 53.20 |
| 021 144 0300 | Stripping | Topsoil & stockpiling, adverse soil | 1,650 | cu. yd/day | 2.05 | 0.49 | 31.92 | 15.61 |
| 022 242 5220 | Excavation | Bulk, open site, common earth, 150' hau | 800 | cu. yd/day | 0.99 | 1.01 | 15.96 | 16.09 |
| 022 208 5220 | Backfill | Structural, common earth, 150' haul | 1,950 | cu. yd/day | 2.42 | 0.41 | 15.96 | 6.60 |
| 022 226 5020 | Compaction | Vibrating roller, 6 " lifts, 3 passes | 1,950 | cu. yd/day | 2.42 | 0.41 | 31.92 | 13.21 |
| TOTAL | | | | | | | | 104.71 |

Calculation of days required for the indicated pieces of equipment to grade the designated acreage.

(Equip)(day)/yr: 104.71
Qty Equipment: 3.83
Grading days/yr: 27.34

| Round to | 27 | grading days/yr |
|---|---|---|

**WINDO Implementation Plan Projects at Beale AFB, CA**

**Construction Combustion Emissions**

Includes:

| | | | |
|---|---|---|---|
| 1 | 100% of Construct 940 ARW AGS Squadron Maintenance/Administration Facility | 5,156 ft2 | 0.12 acres |
| 2 | 100% of Construct 940 SFS Mobility Equipment Storage Facility | 16,629 ft2 | 0.38 acres |
| 3 | 100% of Construct Shoppette Gas Service Station | 8,652 ft2 | 0.20 acres |
| 4 | 100% of Construct Shoppette Gas Service Station Pavements | 125,888 ft2 | 2.89 acres |
| 5 | 100% of Construct Car Wash | 900 ft2 | 0.02 acres |

Note: The above projects are FY05 funded projects. It is assumed that these projects will be completed sometime in CY06.

**Construction Site Air Emissions**
Combustion Emissions of ROG, NOx, SO2, CO and PM10 Due to Construction
Assumed 12 foot wide construction disturbance for perimeter fence

**User Inputs:**

| | | | |
|---|---|---|---|
| Total Building Area: | 31,337 | $ft^2$ | (1-4) |
| Total Paved Area: | 125,888 | $ft^2$ | (5) |
| Total Disturbed Area: | 3.61 | acres | (1-5) |
| Construction Duration: | 1.0 | years | (assumed) |
| Annual Construction Activity: | 230 | days/yr | (assumed) |

## Results:[Average per Year Over the Construction Period]

| | VOC | NOx | SO2 | CO | PM10 |
|---|---|---|---|---|---|
| Emissions, lbs/day | 26.37 | 60.52 | 3.01 | 52.35 | 5.02 |
| Emissions, tons/yr | 3.03 | 6.96 | 0.35 | 6.02 | 0.58 |

## Calculation of Unmitigated Emissions

Summary of Input Parameters

| | VOC | NOx | SO2 | CO | PM10 |
|---|---|---|---|---|---|
| Total new acres disturbed: | 3.61 | 3.61 | 3.61 | 3.61 | 3.61 |
| Total new acres paved: | 2.89 | 2.89 | 2.89 | 2.89 | 2.89 |
| Total new building space, $ft^2$: | 31,337 | 31,337 | 31,337 | 31,337 | 31,337 |
| Total years: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Area graded, acres in 1 yr: | 3.61 | 3.61 | 3.61 | 3.61 | 3.61 |
| Area paved, acres in 1 yr: | 2.89 | 2.89 | 2.89 | 2.89 | 2.89 |
| Building space, $ft^2$ in 1 yr: | 31,337 | 31,337 | 31,337 | 31,337 | 31,337 |

**Annual Emissions by Source (lbs/day)**

| | VOC | NOx | SO2 | CO | PM10 |
|---|---|---|---|---|---|
| Grading Equipment | 0.9 | 5.8 | 0.4 | 1.2 | 1.0 |
| Asphalt Paving | 0.8 | 0.0 | 0.0 | 0.0 | 0.0 |
| Stationary Equipment | 5.3 | 4.3 | 0.3 | 0.9 | 0.3 |
| Mobile Equipment | 5.0 | 50.5 | 2.3 | 50.2 | 3.8 |
| Architectural Coatings (Non-Res) | 14.4 | 0.0 | 0.0 | 0.0 | 0.0 |
| **Total Emissions (lbs/day):** | **26.4** | **60.5** | **3.0** | **52.3** | **5.0** |

Emission Factors

Reference: Air Quality Thresholds of Significance, SMAQMD, 1994.

| | SMAQMD Emission Factor | | | | |
|---|---|---|---|---|---|
| Source | VOC | NOx | SO2 * | CO * | PM10 |
| Grading Equipment | 2.50E-01 lbs/acre/day | 1.60E+00 lbs/acre/day | 0.11 lbs/acre/day | 0.35 lbs/acre/day | 2.80E-01 lbs/acre/day |
| Asphalt Paving | 2.62E-01 lbs/acre/day | NA | NA | NA | NA |
| Stationary Equipment | 1.68E-04 lbs/day/$ft^2$ | 1.37E-04 lbs/day/$ft^2$ | 9.11E-06 lbs/day/$ft^2$ | 2.97E-05 lbs/day/$ft^2$ | 8.00E-06 lbs/day/$ft^2$ |
| Mobile Equipment | 1.60E-04 lbs/day/$ft^2$ | 1.61E-03 lbs/day/$ft^2$ | 7.48E-05 lbs/day/$ft^2$ | 0.0016 lbs/day/$ft^2$ | 1.20E-04 lbs/day/$ft^2$ |
| Architectural Coatings (Non-Res) | 8.15E-02 lbs/day/ft | NA | NA | NA | NA |

* Factors for grading equipment and stationary equipment are calculated from AP-42 for diesel engines using ratios with the NOx factors. Factors for mobile equipment are calculated from ratios with Mobile5a 2001 NOx emission factors for heavy duty trucks for each site.

**WINDO Implementation Plan Projects at Beale AFB, CA**

**Construction Fugitive Dust Emissions**

Calculation of PM10 Emissions Due to Site Preparation (Uncontrolled).

User Input Parameters / Assumptions

| | | | |
|---|---|---|---|
| Acres graded per year: | 3.61 | acres/yr | (From "Combustion" worksheet) |
| Grading days/yr: | 3.95 | days/yr | (From "Grading" worksheet) |
| Exposed days/yr: | 90 | assumed days/yr graded area is exposed | |
| Grading Hours/day: | 8 | hr/day | |
| Soil piles area fraction: | 0.10 | (assumed fraction of site area covered by soil piles) | |
| Soil percent silt, s: | 8.5 | % | (mean silt content; expected range: 0.5 to 23, AP-42 Table 13.2.2-1) |
| Soil percent moisture, M: | 50 | % | (NOAA 2003 http://www.cpc.noaa.gov/products/soilmst/drought_composite.html#CSMRP) |
| Annual rainfall days, p: | 60 | days/yr | rainfall exceeds 0.01 inch/day (AP-42 Fig 13.2.2-1) |
| Wind speed > 12 mph %, I: | 21.5 | % | Ave. wind speed at Yuba City, CA (http://www.epa.gov/ttn/naaqs/ozone/areas/wind.htm) |
| Fraction of TSP, J: | 0.5 | (SCAQMD recommendation) | |
| Mean vehicle speed, S: | 5 | mi/hr | (On-site) |
| Dozer path width: | 8 | ft | |
| Qty construction vehicles: | 3.83 | vehicles | (From "Grading" worksheet) |
| On-site VMT/vehicle/day: | 5 | mi/veh/day | (Excluding bulldozer VMT during grading) |
| PM10 Adjustment Factor k | 2.6 | lb/VMT | (AP-42 Table 13.2.2-2 9/98 for PM10) |
| PM10 Adjustment Factor a | 0.8 | (dimensionless) | (AP-42 Table 13.2.2-2 9/98 for PM10) |
| PM10 Adjustment Factor b | 0.4 | (dimensionless) | (AP-42 Table 13.2.2-2 9/98 for PM10) |
| PM10 Adjustment Factor c | 0.3 | (dimensionless) | (AP-42 Table 13.2.2-2 9/98 for PM10) |
| Mean Vehicle Weight W | 40 | tons | assumed for aggregate trucks |

**Emissions Due to Soil Disturbance Activities**

Operation Parameters (Calculated from User Inputs)

| | | | |
|---|---|---|---|
| Grading duration per acre | 8.7 | hr/acre | |
| Bulldozer mileage per acre | 1 | VMT/acre | (Miles traveled by bulldozer during grading) |
| Construction VMT per day | 19 | VMT/day | |
| Construction VMT per acre | 20.9 | VMT/acre | (Travel on unpaved surfaces within site) |

Equations Used (Corrected for PM10)

| Operation | Empirical Equation | Units | AP-42 Section (5th Edition) |
|---|---|---|---|
| Bulldozing | $0.75(s^{1.5})/(M^{1.4})$ | lbs/hr | Table 11.9-18.24, Overburden |
| Grading | $(0.60)(0.051)s^{2.0}$ | lbs/VMT | Table 11.9-18.24 |
| Vehicle Traffic | $[k(s/12)^{a} (W/3)^{b}/(M/0.2)^{c}] [(365-P)/365]$ | lbs/VMT | Section 13.2.2 |

Source: Compilation of Air Pollutant Emission Factors, Vol. I, USEPA AP-42, Section 11.9 dated 7/98 and Section 13.2 dated 9/98

Calculation of PM10 Emission Factors for Each Operation

| Operation | Emission Factor (mass/ unit) | Operation Parameter | Emission Factor (lbs/ acre) |
|---|---|---|---|
| Bulldozing | 0.08 lbs/hr | 8.7 hr/acre | 0.7 lbs/acre |
| Grading | 0.77 lbs/VMT | 1 VMT/acre | 0.8 lbs/acre |
| Vehicle Traffic | 0.89 lbs/VMT | 20.9 VMT/acre | 18.5 lbs/acre |

**Emissions Due to Wind Erosion of Soil Piles and Exposed Graded Surface**

Reference: Air Quality Thresholds of Significance, SCAQMD, 1994.

Soil Piles EF = 1.7(s/1.5)[(365 - H)/235](I/15)(J) = (s)(365 - H)(I)(J)/(3110.2941), p. A9-99.

Soil Piles EF = 9 lbs/day/acre covered by soil piles

Consider soil piles area fraction so that EF applies to graded area

Soil piles area fraction: 0.10 (Fraction of site area covered by soil piles)
Soil Piles EF = 0.9 lbs/day/acres graded

Graded Surface EF = 26.4 lbs/day/acre (recommended in CEQA Manual, p. A9-93).

**Calculation of Annual PM10 Emissions**

| Source | Emission | Factor | Graded Acres/yr | Exposed days/yr | Emissions lbs/yr | Emissions tons/yr |
|---|---|---|---|---|---|---|
| Bulldozing | 0.7 | lbs/acre | 3.61 | NA | 3 | 0.00 |
| Grading | 0.8 | lbs/acre | 3.61 | NA | 3 | 0.00 |
| Vehicle Traffic | 18.5 | lbs/acre | 3.61 | NA | 67 | 0.03 |
| Erosion of Soil Piles | 0.9 | lbs/acre/day | 3.61 | 90 | 292 | 0.15 |
| Erosion of Graded Surface | 26.4 | lbs/acre/day | 3.61 | 90 | 8,576 | 4.29 |
| TOTAL | | | | | 8,940 | 4.47 |

Soil Disturbance EF: 20 lbs/acre
Wind Erosion EF: 27.3 lbs/acre/day

Back calculate to get EF: 627.6 lbs/acre/grading day

**WINDO Implementation Plan Projects at Beale AFB, CA**

**Construction (Grading) Schedule**

Estimate of time required to grade a specified area.

Input Parameters

Construction area: 3.61 acres/yr (from "Combustion" Worksheet)

Qty Equipment: 3.00 (calculated based on acres disturbed, assuming that up to three machines can effectively work on a 25 acre area, with a minimum of three machines for any job, regardless of area graded)

Assumptions.

Terrain is mostly flat.
An average of 6" soil is excavated from one half of the site and backfilled to the other half of the site; no soil is hauled off-site or borrowed.
200 hp bulldozers are used for site clearing.
300 hp bulldozers are used for stripping, excavation, and backfill.
Vibratory drum rollers are used for compacting.
Stripping, Excavation, Backfill and Compaction require an average of two passes each.
Excavation and Backfill are assumed to involve only half of the site.

Calculation of days required for one piece of equipment to grade the specified area.

Reference: Means Heavy Construction Cost Data, 6th Ed., R. S. Means, 1992.

| Means Line No. | Operation | Description | Output | Units | Acres per equip-day) | equip-days per acre | Acres/yr | Equip-days per year |
|---|---|---|---|---|---|---|---|---|
| 021 108 0550 | Site Clearing | Dozer & rake, medium brush | 0.6 | acre/day | 0.6 | 1.67 | 3.61 | 6.02 |
| 021 144 0300 | Stripping | Topsoil & stockpiling, adverse soil | 1,650 | cu. yd/day | 2.05 | 0.49 | 3.61 | 1.76 |
| 022 242 5220 | Excavation | Bulk, open site, common earth, 150' hau | 800 | cu. yd/day | 0.99 | 1.01 | 1.80 | 1.82 |
| 022 208 5220 | Backfill | Structural, common earth, 150' haul | 1,950 | cu. yd/day | 2.42 | 0.41 | 1.80 | 0.75 |
| 022 226 5020 | Compaction | Vibrating roller, 6 " lifts, 3 passes | 1,950 | cu. yd/day | 2.42 | 0.41 | 3.61 | 1.49 |
| TOTAL | | | | | | | | 11.84 |

Calculation of days required for the indicated pieces of equipment to grade the designated acreage.

(Equip)(day)/yr: 11.84
Qty Equipment: 3.00
Grading days/yr: 3.95

| Round to | 4 grading days/yr |
|---|---|

**WINDO Implementation Plan Projects at Beale AFB, CA**

**Construction Combustion Emissions**

Includes:

| | | | |
|---|---|---|---|
| 1 | 100% of Demolish NCO, Building 5800 | 44,848 ft2 | 1.03 acres |
| 2 | 100% of Construct 2 Bay Pre-flight Hangar | 21,988 ft2 | 0.50 acres |
| 3 | 100% of Construct Aircraft Parking Arpron | 107,639 ft2 | 2.47 acres |
| 4 | 100% of Construct 940 ARW Consolidated Support Facility | 23,672 ft2 | 0.54 acres |

Note: The above projects are FY06 funded projects. It is assumed that these projects will be completed sometime in CY07.

**Construction Site Air Emissions**
Combustion Emissions of ROG, NOx, SO2, CO and PM10 Due to Construction
Assumed 12 foot wide construction disturbance for perimeter fence

**User Inputs:**

| | | | |
|---|---|---|---|
| Total Building Area: | 90,508 | $ft^2$ | (1, 2, & 4) |
| Total Paved Area: | 107,639 | $ft^2$ | (3) |
| Total Disturbed Area: | 4.55 | acres | (1-4) |
| Construction Duration: | 1.0 | years | (assumed) |
| Annual Construction Activity: | 230 | days/yr | (assumed) |

## Results:[Average per Year Over the Construction Period]

| | VOC | NOx | SO2 | CO | PM10 |
|---|---|---|---|---|---|
| Emissions, lbs/day | 55.99 | 165.40 | 8.08 | 149.16 | 12.86 |
| Emissions, tons/yr | 6.44 | 19.02 | 0.93 | 17.15 | 1.48 |

## Calculation of Unmitigated Emissions

Summary of Input Parameters

| | VOC | NOx | SO2 | CO | PM10 |
|---|---|---|---|---|---|
| Total new acres disturbed: | 4.55 | 4.55 | 4.55 | 4.55 | 4.55 |
| Total new acres paved: | 2.47 | 2.47 | 2.47 | 2.47 | 2.47 |
| Total new building space, $ft^2$: | 90,508 | 90,508 | 90,508 | 90,508 | 90,508 |
| Total years: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Area graded, acres in 1 yr: | 4.55 | 4.55 | 4.55 | 4.55 | 4.55 |
| Area paved, acres in 1 yr: | 2.47 | 2.47 | 2.47 | 2.47 | 2.47 |
| Building space, $ft^2$ in 1 yr: | 90,508 | 90,508 | 90,508 | 90,508 | 90,508 |

**Annual Emissions by Source (lbs/day)**

| | VOC | NOx | SO2 | CO | PM10 |
|---|---|---|---|---|---|
| Grading Equipment | 1.1 | 7.3 | 0.5 | 1.6 | 1.3 |
| Asphalt Paving | 0.6 | 0.0 | 0.0 | 0.0 | 0.0 |
| Stationary Equipment | 15.2 | 12.4 | 0.8 | 2.7 | 0.7 |
| Mobile Equipment | 14.5 | 145.7 | 6.8 | 144.9 | 10.9 |
| Architectural Coatings (Non-Res) | 24.5 | 0.0 | 0.0 | 0.0 | 0.0 |
| **Total Emissions (lbs/day):** | **56.0** | **165.4** | **8.1** | **149.2** | **12.9** |

Emission Factors
Reference: Air Quality Thresholds of Significance, SMAQMD, 1994.

| | SMAQMD Emission Factor | | | | |
|---|---|---|---|---|---|
| Source | VOC | NOx | SO2 * | CO * | PM10 |
| Grading Equipment | 2.50E-01 lbs/acre/day | 1.60E+00 lbs/acre/day | 0.11 lbs/acre/day | 0.35 lbs/acre/day | 2.80E-01 lbs/acre/day |
| Asphalt Paving | 2.62E-01 lbs/acre/day | NA | NA | NA | NA |
| Stationary Equipment | 1.68E-04 lbs/day/$ft^2$ | 1.37E-04 lbs/day/$ft^2$ | 9.11E-06 lbs/day/$ft^2$ | 2.97E-05 lbs/day/$ft^2$ | 8.00E-06 lbs/day/$ft^2$ |
| Mobile Equipment | 1.60E-04 lbs/day/$ft^2$ | 1.61E-03 lbs/day/$ft^2$ | 7.48E-05 lbs/day/$ft^2$ | 0.0016 lbs/day/$ft^2$ | 1.20E-04 lbs/day/$ft^2$ |
| Architectural Coatings (Non-Res) | 8.15E-02 lbs/day/ft | NA | NA | NA | NA |

* Factors for grading equipment and stationary equipment are calculated from AP-42 for diesel engines using ratios with the NOx factors. Factors for mobile equipment are calculated from ratios with Mobile5a 2001 NOx emission factors for heavy duty trucks for each site.

**WINDO Implementation Plan Projects at Beale AFB, CA**

**Construction Fugitive Dust Emissions**

Calculation of PM10 Emissions Due to Site Preparation (Uncontrolled).

User Input Parameters / Assumptions

| | | | |
|---|---|---|---|
| Acres graded per year: | 4.55 | acres/yr | (From "Combustion" worksheet) |
| Grading days/yr: | 4.97 | days/yr | (From "Grading" worksheet) |
| Exposed days/yr: | 90 | assumed days/yr graded area is exposed | |
| Grading Hours/day: | 8 | hr/day | |
| Soil piles area fraction: | 0.10 | (assumed fraction of site area covered by soil piles) | |
| Soil percent silt, s: | 8.5 | % | (mean silt content; expected range: 0.5 to 23, AP-42 Table 13.2.2-1) |
| Soil percent moisture, M: | 50 | % | (NOAA 2003 http://www.cpc.noaa.gov/products/soilmst/drought_composite.html#CSMRP) |
| Annual rainfall days, p: | 60 | days/yr | rainfall exceeds 0.01 inch/day (AP-42 Fig 13.2.2-1) |
| Wind speed > 12 mph %, I: | 21.5 | % | Ave. wind speed at Yuba City, CA (http://www.epa.gov/ttn/naaqs/ozone/areas/wind.htm) |
| Fraction of TSP, J: | 0.5 | (SCAQMD recommendation) | |
| Mean vehicle speed, S: | 5 | mi/hr | (On-site) |
| Dozer path width: | 8 | ft | |
| Qty construction vehicles: | 3.83 | vehicles | (From "Grading" worksheet) |
| On-site VMT/vehicle/day: | 5 | mi/veh/day | (Excluding bulldozer VMT during grading) |
| PM10 Adjustment Factor k | 2.6 | lb/VMT | (AP-42 Table 13.2.2-2 9/98 for PM10) |
| PM10 Adjustment Factor a | 0.8 | (dimensionless) | (AP-42 Table 13.2.2-2 9/98 for PM10) |
| PM10 Adjustment Factor b | 0.4 | (dimensionless) | (AP-42 Table 13.2.2-2 9/98 for PM10) |
| PM10 Adjustment Factor c | 0.3 | (dimensionless) | (AP-42 Table 13.2.2-2 9/98 for PM10) |
| Mean Vehicle Weight W | 40 | tons | assumed for aggregate trucks |

**Emissions Due to Soil Disturbance Activities**

Operation Parameters (Calculated from User Inputs)

| | | | |
|---|---|---|---|
| Grading duration per acre | 8.7 | hr/acre | |
| Bulldozer mileage per acre | 1 | VMT/acre | (Miles traveled by bulldozer during grading) |
| Construction VMT per day | 19 | VMT/day | |
| Construction VMT per acre | 20.9 | VMT/acre | (Travel on unpaved surfaces within site) |

Equations Used (Corrected for PM10)

| Operation | Empirical Equation | Units | AP-42 Section (5th Edition) |
|---|---|---|---|
| Bulldozing | $0.75(s^{1.5})/(M^{1.4})$ | lbs/hr | Table 11.9-18.24, Overburden |
| Grading | $(0.60)(0.051)s^{2.0}$ | lbs/VMT | Table 11.9-18.24 |
| Vehicle Traffic | $[k(s/12)^{a} (W/3)^{b}/(M/0.2)^{c}] [(365-P)/365]$ | lbs/VMT | Section 13.2.2 |

Source: Compilation of Air Pollutant Emission Factors, Vol. I, USEPA AP-42, Section 11.9 dated 7/98 and Section 13.2 dated 9/98

Calculation of PM10 Emission Factors for Each Operation

| Operation | Emission Factor (mass/ unit) | Operation Parameter | Emission Factor (lbs/ acre) |
|---|---|---|---|
| Bulldozing | 0.08 lbs/hr | 8.7 hr/acre | 0.7 lbs/acre |
| Grading | 0.77 lbs/VMT | 1 VMT/acre | 0.8 lbs/acre |
| Vehicle Traffic | 0.89 lbs/VMT | 20.9 VMT/acre | 18.5 lbs/acre |

**Emissions Due to Wind Erosion of Soil Piles and Exposed Graded Surface**

Reference: Air Quality Thresholds of Significance, SCAQMD, 1994.

Soil Piles EF = 1.7(s/1.5)[(365 - H)/235](I/15)(J) = (s)(365 - H)(I)(J)/(3110.2941), p. A9-99.

Soil Piles EF = 9 lbs/day/acre covered by soil piles

Consider soil piles area fraction so that EF applies to graded area

Soil piles area fraction: 0.10 (Fraction of site area covered by soil piles)
Soil Piles EF = 0.9 lbs/day/acres graded

Graded Surface EF = 26.4 lbs/day/acre (recommended in CEQA Manual, p. A9-93).

**Calculation of Annual PM10 Emissions**

| Source | Emission | Factor | Graded Acres/yr | Exposed days/yr | Emissions lbs/yr | Emissions tons/yr |
|---|---|---|---|---|---|---|
| Bulldozing | 0.7 | lbs/acre | 4.55 | NA | 3 | 0.00 |
| Grading | 0.8 | lbs/acre | 4.55 | NA | 4 | 0.00 |
| Vehicle Traffic | 18.5 | lbs/acre | 4.55 | NA | 84 | 0.04 |
| Erosion of Soil Piles | 0.9 | lbs/acre/day | 4.55 | 90 | 368 | 0.18 |
| Erosion of Graded Surface | 26.4 | lbs/acre/day | 4.55 | 90 | 10,808 | 5.40 |
| TOTAL | | | | | 11,267 | 5.63 |

Soil Disturbance EF: 20 lbs/acre
Wind Erosion EF: 27.3 lbs/acre/day

Back calculate to get EF: 498.0 lbs/acre/grading day

**WINDO Implementation Plan Projects at Beale AFB, CA**

**Construction (Grading) Schedule**

Estimate of time required to grade a specified area.

Input Parameters

Construction area: 4.55 acres/yr (from "Combustion" Worksheet)

Qty Equipment: 3.00 (calculated based on acres disturbed, assuming that up to three machines can effectively work on a 25 acre area, with a minimum of three machines for any job, regardless of area graded)

Assumptions.

Terrain is mostly flat.
An average of 6" soil is excavated from one half of the site and backfilled to the other half of the site; no soil is hauled off-site or borrowed.
200 hp bulldozers are used for site clearing.
300 hp bulldozers are used for stripping, excavation, and backfill.
Vibratory drum rollers are used for compacting.
Stripping, Excavation, Backfill and Compaction require an average of two passes each.
Excavation and Backfill are assumed to involve only half of the site.

Calculation of days required for one piece of equipment to grade the specified area.

Reference: Means Heavy Construction Cost Data, 6th Ed., R. S. Means, 1992.

| Means Line No. | Operation | Description | Output | Units | Acres per equip-day) | equip-days per acre | Acres/yr | Equip-days per year |
|---|---|---|---|---|---|---|---|---|
| 021 108 0550 | Site Clearing | Dozer & rake, medium brush | 0.6 | acre/day | 0.6 | 1.67 | 4.55 | 7.58 |
| 021 144 0300 | Stripping | Topsoil & stockpiling, adverse soil | 1,650 | cu. yd/day | 2.05 | 0.49 | 4.55 | 2.22 |
| 022 242 5220 | Excavation | Bulk, open site, common earth, 150' hau | 800 | cu. yd/day | 0.99 | 1.01 | 2.27 | 2.29 |
| 022 208 5220 | Backfill | Structural, common earth, 150' haul | 1,950 | cu. yd/day | 2.42 | 0.41 | 2.27 | 0.94 |
| 022 226 5020 | Compaction | Vibrating roller, 6 " lifts, 3 passes | 1,950 | cu. yd/day | 2.42 | 0.41 | 4.55 | 1.88 |
| TOTAL | | | | | | | | 14.92 |

Calculation of days required for the indicated pieces of equipment to grade the designated acreage.

(Equip)(day)/yr: 14.92
Qty Equipment: 3.00
Grading days/yr: 4.97

| Round to | 5 grading days/yr |
|---|---|

**SACRAMENTO VALLEY INTRASTATE AQCF**

| STATE | COUNTY | NOx (tpy) AREA SOURCE EMISSIONS | NOx (tpy) POINT SOURCE EMISSIONS | VOC (tpy) AREA SOURCE EMISSIONS | VOC (tpy) POINT SOURCE EMISSIONS | CO (tpy) AREA SOURCE EMISSIONS | CO (tpy) POINT SOURCE EMISSIONS |
|---|---|---|---|---|---|---|---|
| CA | Butte Co | 10,172 | 329 | 13,710 | 204 | 92,603 | 944 |
| CA | Colusa Co | 3,165 | 872 | 3,434 | 245 | 27,650 | 261 |
| CA | Glenn Co | 3,410 | 506 | 3,952 | 190 | 28,267 | 1,042 |
| CA | Sacramento Co | 47,378 | 360 | 46,038 | 613 | 357,608 | 432 |
| CA | Shasta Co | 11,015 | 2,708 | 13,880 | 318 | 115,836 | 6,935 |
| CA | Solano Co | 17,128 | 3,914 | 20,746 | 1,591 | 115,310 | 1,734 |
| CA | Sutter Co | 5,176 | 800 | 6,321 | 47 | 42,272 | 226 |
| CA | Tehama Co | 4,483 | 223 | 4,057 | 47 | 32,166 | 452 |
| CA | Yolo Co | 9,833 | 808 | 8,480 | 292 | 49,159 | 699 |
| CA | Yuba Co | 3,687 | 368 | 4,566 | 48 | 31,032 | 128 |
| | | 115,447 | 10,888 | 125,184 | 3,595 | 891,903 | 12,853 |

| STATE | COUNTY | SO2 (tpy) AREA SOURCE EMISSIONS | SO2 (tpy) POINT SOURCE EMISSIONS | PM10 (tpy) AREA SOURCE EMISSIONS | PM10 (tpy) POINT SOURCE EMISSIONS |
|---|---|---|---|---|---|
| CA | Butte Co | 486 | 2 | 11,830 | 394 |
| CA | Colusa Co | 140 | 11 | 8,485 | 403 |
| CA | Glenn Co | 212 | 35 | 6,871 | 525 |
| CA | Sacramento Co | 1,551 | 36 | 22,616 | 504 |
| CA | Shasta Co | 531 | 327 | 13,561 | 648 |
| CA | Solano Co | 716 | 5,815 | 10,125 | 413 |
| CA | Sutter Co | 293 | 5 | 7,492 | 631 |
| CA | Tehama Co | 306 | 2 | 7,705 | 104 |
| CA | Yolo Co | 450 | 381 | 12,517 | 871 |
| CA | Yuba Co | 169 | 39 | 4,214 | 282 |
| | | 4,854 | 6,653 | 105,416 | 4,775 |

**Sacramento Valley Intrastate AQCR**

| NOx | VOC | CO | SO2 | PM10 |
|---|---|---|---|---|
| 126,335 | 128,779 | 904,756 | 11,507 | 110,191 |

SOURCE:
http://www.epa.gov/air/data/nettier.html
USEPA - AirData NET Tier Report
*Net Air pollution sources (area and point) in tons per year (1999)
Site visited on February 20, 2004